

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر ابريل



Summary

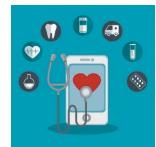
Lesson 1 Artificial Intelligence Applications

- » **Narrow AI:** It focuses on specific tasks, such as face recognition or language translation.
- » **General AI (GAI):** It can perform any human tasks, think, innovate, and adapt.
- » **Super AI (SAI):** It is the most advanced; it can solve complex problems and discover new things.

Key Points:

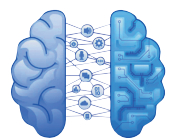
» Applications of AI in Daily Life: سلسلة كتب الاستاذ

- 1 **Personal Assistant:** Like Siri or Alexa, They use AI to understand and perform commands.
- 2 **Smart Games:** Video games use AI to make games fun and challenging.
- 3 **Smart Cars:** Self-driving cars are enabled by AI.
- 4 **Digital Doctors:** AI aids in faster and more accurate medical diagnoses. سلسلة كتب الاستاذ
- 5 **Instant Translator:** AI translates languages in real-time.
- 6 **Smart Shopping:** AI suggests products based on previous purchases.



» Fields of Artificial Intelligence:

- 1 **Machine Learning:** AI learns from data and experiences.
- 2 **Natural Language Processing (NLP):** AI understands, interprets, and speaks human language.
- 3 **Computer Vision:** AI analyzes and understands visual information.





- ④ **Robotics:** AI-powered robots perform various tasks.
- ⑤ **Expert Systems:** AI solves complex problems and make decisions.
- ⑥ **Deep Learning:** AI learns complex tasks using neural networks.

» Creating Intelligent Models with Teachable Machine:

- **Teachable Machine:** It is a tool for creating models to recognize images, sounds, and movements.
- **Model Building Training:** Teaching AI by showing it examples is similar to teaching a child.

Lesson 2 Sensors

Definition:

- » **Sensors:** They are devices that sense changes in the environment and convert them into signals for machines to understand and make decisions.

Key Points:

» How Sensors Work:

- ① **Sensing:** They capture information (heat, light, and sound).
- ② **Signal Conversion:** They convert information into electrical signals.
- ③ **Transmission:** They send signals to display results or perform operations.

» Importance of Sensors for Robots:

- **Function:** Sensors act as the “senses” of robots, helping them see, hear, sense, and touch.

» Types of Robotic Sensors:

- ① **Distance Sensors:** They measure the distance to avoid collisions.
- ② **Light Sensors:** They adapt to changing light conditions.
- ③ **Sound Sensors:** They respond to voice commands.
- ④ **Motion Sensors:** They detect movement and direction changes.



5 **Special Sensors:** They measure temperature and humidity.

» Examples of Devices Using Sensors:

1 **Vacuum Cleaner Robot:** It avoids obstacles.

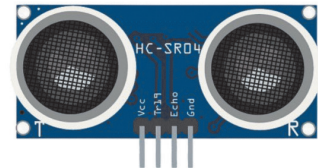
2 **Surgical Robot:** It uses precise sensors to perform surgeries.

3 **Self-Driving Cars:** They see the road and make decisions.

» Types of Distance Sensors:

1 **Ultrasonic Sensors:** They emit high-frequency sound waves to measure distance.

– **Examples:** Vacuum cleaner robots, parking systems, and fluid level measurement



2 **Laser Rangefinders:** They emit laser beams for high accuracy.

– **Examples:** 3D laser scanners, ground scanning systems, and industrial measurement



3 **Visible Light Sensors:** They use digital cameras to analyze images.

– **Examples:** Self-driving car cameras, industrial vision systems, and augmented reality systems

4 **Infrared Sensors:** They emit infrared rays, then receive the returning rays.

» They are widely used in consumer electronics.

– **Examples:** Remote controls, and non-contact thermometers



5 **Time of Flight Sensors:** They measure the light pulse travel time.

– **Examples:** 3D sensors, and motion tracking systems

» Factors for Choosing Sensors:

1 **Required Range:** The maximum distance to measure

2 **Required Accuracy:** The measurement precision needed

3 **Operating Environment:** Conditions like lighting, temperature, and humidity.

4 **Cost:** Device and installation expenses.



»» Daily Applications of Sensors:

- 1 **Smartphones:** Taking pictures, adjusting lighting, determining locations
- 2 **Modern Cars:** Measuring speed, warning of collisions, assisting in parking
- 3 **Smart Homes:** Motion sensors for automatic lighting
- 4 **Phone Microphone:** Converting sound to electrical signals
- 5 **Motion Sensors in Games:** Detecting phone tilts
- 6 **Touch Screen:** Sensing finger touches

Lesson 3 Robots

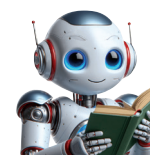
Definition:

- »» **Robot:** It is a device programmed to automatically perform specific tasks, capable of moving, sensing, and interacting with its surroundings.

Key Points:

»» Types of Robots:

- 1 **Industrial Robots:** They are used in factories for precise tasks, e.g., car production.
- 2 **Home Robots:** They are found in homes, e.g., Roomba for cleaning floors.
- 3 **Medical Robots:** They assist in surgeries with high accuracy.
- 4 **Educational Robots:** They are used in schools to teach programming, e.g., LEGO Mindstorms.



»» Robot Components:

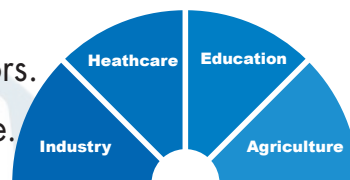
- 1 **Structure:** It is the main part carrying all components, made of materials like metal, plastic, or carbon.
- 2 **Sensors:** They are the senses of the robot, e.g., sound sensors and cameras.
- 3 **Motors:** They move parts of a robot, so it can move and execute commands, e.g., electric motors and pneumatic motors.



- ④ **Controller:** It is the “brain” of the robot, processes data and issues commands.
- ⑤ **Power Source:** It can be batteries, solar cells, or direct electrical power source.
- ⑥ **Software:** It makes the robot “smart,” includes algorithms for responses.
- ⑦ **Communication Tools:** They interact with users or other robots, e.g., Bluetooth and Wi-Fi.

» Areas of Use of Robots:

- ① **Industry:** They improve productivity, reducing errors.
- ② **Healthcare:** They assist in surgeries and patient care.
- ③ **Education:** They provide interactive learning.
- ④ **Agriculture:** They are used in precision farming to increase crops and reduce waste.



» Challenges:

- ① **Safety:** The need to ensure the safety of robots during work.
- ② **Employment:** Concerns that they can replace human labor.
- ③ **Ethics:** Impact on society.

» Benefits:

- ① **Increased Efficiency and Productivity:** They can do continuous work without fatigue or interruption.
- ② **High Accuracy and Reduced Errors:** They are precise in tasks, like surgeries and electronics assembly.
- ③ **Safety and Security:** They can perform dangerous tasks and handle heavy weights and hazardous materials.
- ④ **Adaptability and Diversity:** They perform various tasks efficiently. Ex: home robots and educational robots
- ⑤ **Reduced Costs:** They provide long-term cost savings by reducing human labor or errors, and achieving accuracy.
- ⑥ **Contributing to Development:** They encourage technological advancements, e.g., space exploration and medical research.



Lesson 4 Scratch

Definition:

- » **Scratch Program:** It is a visual and easy-to-use educational tool for learning programming through games, animations, music, and more.



Key Points:

» Scratch Program Features:

- 1 **Simple Interface:** It uses and orders visual blocks to form programs.
- 2 **Educational:** It is designed to teach basic programming concepts in a fun way.
- 3 **Free:** It is available for download from its official website for free.
- 4 **Creative Thinking:** It develops skills in creative thinking and problem-solving.
- 5 **Problem-solving Skills:** It solves problems in a logical way.
- 6 **Collaboration:** It enhances teamwork skills.
- 7 **Foundation:** It provides a strong start for learning more complex programming languages.
- 8 **Sharing:** Its projects can be shared with others.

» Program Interface:

- **Menu Bar**
- **Command Blocks Area**
- **Script Area:** It collects programming sections.
- **Stage Area:** It shows project results.
- **Sprite Object**
- **Sprites Area:** It contains the project's objects.

» Coordinates:

- **Determine Coordinates:** X=..... (horizontal), Y=..... (vertical)
- **Change Coordinates:** Drag and drop the sprite to a new position.



» Implement the project:

- To execute the project, click on the icon .
- To stop the execution of the project, click on the icon .

» Saving the Project:

- File Menu: Choose "Save to your computer".
- The file extension is **Sb3**.

Lesson 5 Sprites Area in Scratch

Definition:

» **Sprites Area:** It contains the sprites used in the project.

Key Points:

» Sprites Area Features:

- 1 **Name:** It is modified by clicking and renaming.
- 2 **Location:** It determines the sprite's position (X, Y values).
- 3 **Direction:** It changes the sprite's movement direction.
- 4 **Visibility:** It shows or hides the sprite.
- 5 **Size:** It changes the sprite's size.
- 6 **Delete:** It removes the sprite.
- 7 **Add:** It is used to choose a new sprite.

» Adding a New Sprite:

- Choose Sprite: Select Basketball.
- Remove: Delete the cat sprite.

» Project 2: Moving the Ball

- **Objective:** To move the ball randomly, make a sound, repeat 10 times.

» Steps:

- 1 **Motion:** Choose "Go to random position".
- 2 **Sound:** Choose "Play sound".
- 3 **Control:** Choose the "Repeat" command.
- 4 **Events:** Choose the "When Clicked" command.



»» Project 3: Spaceship

– **Objective:** To move a spaceship randomly, make a sound, change size, repeat 5 times, start from (0, 0).

– **Steps:**

- 1 **Insert Sprite:** Add Rocketship.
- 2 **Remove:** Delete the cat sprite.
- 3 **Background:** Choose "Space".

»» Square Drawing Project:

- 1 **Open Project:** Start a new project.
- 2 **Select Pen:** Drag the "pen" block to start drawing.
- 3 **Set Color and Size:** Use "Set Pen Color to" and "Set Pen Size to" blocks.
- 4 **Move the Pen:** Use "Go to x:y:" blocks to draw lines.
- 5 **Repeat the Steps:** Draw more lines to form shapes.

»» Drawing a circle:

»» Use the "Repeat" block to repeat the process of drawing short lines at different angles.

»» Notes:

- 1 **Drawing Shapes:** Set start and end points for lines.
- 2 **Adding Details:** Add features like eyes, mouth, and ears.

Lesson 6 Principles of Python

Definition:

»» **Python:** It is a programming language widely used in data science, machine learning, and web development.





Key Points:

»» Features of Python:

- 1 **Open Source:** It is free and open for everyone to use and develop.
- 2 **Interpreted Language:** It translates codes line by line, making error detection easier.
- 3 **Versatility:** It is used in web development, data science, AI, machine learning, and game programming.
- 4 **Easy-to-Use:** It is simple and organized, with syntax similar to English.
- 5 **Integration:** It can be integrated with languages like C, C++, and Java.
- 6 **Libraries:** Numerous libraries are available for various tasks.

»» Python Libraries:

- »» **NumPy:** It is used in data science, statistics, and AI.
- »» **Pandas:** It is used for data analysis and processing.
- »» **Matplotlib:** It is used for creating graphs and charts.

»» How to Download Python:

- 1 **Visit:** Go to the official Python website www.python.org.
- 2 **Choose Download:** Select the download option.
- 3 **Select System:** Choose your operating system (Windows, Mac, or Linux).
- 4 **Choose Bit Version:** Select 64-bit or 32-bit based on your device specifications.
- 5 **Install:** Download and install the program, following the instructions.

Lesson 7 Variables in Python

Definition:

- »» **Variables:** They are reserved places in memory to store values that can change during program execution.



Key Points:

»» Conditions for Naming Variables in Python:

- 1 Start with a letter or underscore (_).
- 2 Contain letters (A-Z), numbers, or underscore (_).
- 3 Avoid reserved words.

»» Types of Variables in Python:

- 1 **Numbers:** To store numerical values.

- **Integer Variables (int):** $X = 5$, $Y = 10$
- **Decimal Variables (float):** $Z = 5.25$, $A = 8.32$

- 2 **Strings:** To store texts, enclosed in single or double quotes.

– **Examples:** `Name = "Taher"`, `City = 'Cairo'`

- 3 **Booleans:** They contain only two values, True or False.

– **Examples:** `Is_taher_student = False`, `Is_taher_a_teacher = True`

»» Python Program Interface:

- 1 **Interactive Python Interface (Python Shell):** It is used to write and execute simple codes directly.

– It is automatically installed when you install the language.

- 2 **Text Editor:** It is used to write longer, complex codes and save them for later execution.



»» Using the type () Function:

– **Purpose:** To determine the type of a variable.

»» Simple Python Code Using Variables:

– **Print Function:** It displays text, variables, or results of mathematical operations on the output screen.

Final Revision

Model Exam

1

1 Choose the correct answer:

- One of the common applications of sensors is the use of infrared in
 - a. smartphones
 - b. remote controls
 - c. vacuum cleaners
 - d. 3D scanning
- uses data science and machine learning.
 - a. Word
 - b. Excel
 - c. Python
 - d. PowerPoint
- like Siri or Alexa use artificial intelligence to understand your commands.
 - a. Personal assistants
 - b. Instant translators
 - c. Smart shopping sites
 - d. Digital doctors
- The file extension for a Scratch project is
 - a. Docx
 - b. Sb3
 - c. bmp
 - d. Jpg
- are used to avoid obstacles.
 - a. Light sensors
 - b. Sound sensors
 - c. Distance sensors
 - d. Heat sensors

2 Put (✓) or (X): _____ سلسلة كتب الأستاذ

- 1 It is not possible to create applications and websites using Python. ()
- 2 The motors used in robots include electric motors and air motors. ()
- 3 The position of the Sprite can be changed on the stage by double-clicking on it. ()
- 4 Narrow artificial intelligence can perform any task that a human can perform. ()
- 5 Distance sensors help cars determine the distance to other vehicles. ()



3 Complete the following sentences:

- 1 The types of artificial intelligence include and
- 2 Robot components include and

Model Exam

2

1 Choose the correct answer:

- 1 One of the advantages of Python is that they are
 a. open source b. limited use c. not free
- 2 In Scratch program, to add a sound effect the sprite, use the command
 a. Repeat b. Looks c. Play sound
- 3 The file extension for a Scratch project is
 a. Docx b. Sb3 c. bmp
- 4 In Scratch, to add a new object, press on
 a. Start b. Sprite c. Blocks area
- 5 AI can solve problems that are difficult for humans to solve.
 a. Narrow b. General c. Super
- 6 In Scratch, the result of the work or project appears in the
 a. Blocks area b. Stage area c. Script area
- 7 One of the common applications of sensors is using infrared in
 a. vacuum cleaners b. smartphones
 c. remote controls

2 Put (✓) or (X):

- 1 In the wait command, the wait value of 1 represents 1 second. ()
- 2 The first step in the operation of the sensor device is signal conversion. ()
- 3 The position of an object on the platform is determined only by the value of the horizontal axis X. ()
- 4 Python is one of the most difficult programming languages. ()
- 5 The sprites used in the project appear in the Sprites area. ()
- 6 Numpy is a library used in data science, statistics, and artificial intelligence. ()
- 7 To determine the type of a variable, we do not need the type() function. ()

Model Exam

3

1 Choose the correct answer:

- 1 In Scratch, to repeat the movement of an object, we use the command.
 a. Start b. Repeat c. stop
- 2 A Scratch file extension is
 a. Docx b. Sb3 c. Bmp
- 3 In Scratch, to add sound effects to an object, we use the command.
 a. Repeat b. play sound c. Looks
- 4 To add a new object, click on
 a. Area Blocks b. Choose Sprite c. None of them
- 5 A new background is added to the project by clicking on
 a. Choose Sprite b. Choose Backdrop c. None of them



2 Put (✓) or (X):

- 1 In the wait command, the value of waiting represents 1 second. ()
- 2 In Scratch, the horizontal and vertical axis are used to know the current location of the object on the platform. ()
- 3 We use click and drag and drop to interact with any command inside the code segment. ()
- 4 To make the movement continuous, you can assemble the command several times. ()
- 5 Before executing any project, the objects coordinates on the platform should be $y=10$, $x=10$. ()

Model Exam

4

1 Choose the correct answer:

- 1 artificial intelligence can solve problems that are difficult for humans to solve easily and discover new things we never imagined before.
 a. Narrow b. General c. Super d. Precise
- 2 Laser rangefinders are accurate because they use
 a. sound waves b. visible light
 c. high frequency waves d. laser beams
- 3 The is used for non-contact temperature measurement.
 a. ultrasonic sensor b. infrared sensor
 c. light sensor d. motion sensor
- 4 A new background for the project is inserted in the Scratch program by pressing
 a. Choose a Backdrop b. Script Area
 c. Stage d. Choose Sprite

- 5 To execute the project, click on the icon
 a.  b.  c.  d. 
- 6 In Scratch, to repeat the sprite's movement 10 times from Control, we use the command.
 a. Repeat b. Start c. Choose Sprite d. Stop
- 7 To add a new object, press on
 a. Choose Sprite b. Start c. Repeat d. Play sound
- 8 One of the advantages of Python is that it is
 a. open source b. closed source
 c. not free d. limited use
- 9 The official website of Python is
 a. www.python.org b. www.python.edu
 c. www.pythonlibr.adp d. www.application.org
- 10 is a library for data analysis and manipulation.
 a. Pandas b. Matplotlib c. NumPy d. Angular
- 11 The function is used to display texts or values on the output screen.
 a. Cos() b. Type() c. Print() d. Sin()
- 12 One of the sensors that are used to measure distance using high frequency sound waves are
 a. ultrasonic sensors b. laser rangefinders
 c. infrared sensors d. motion sensors

2 Put (✓) or (X):

- 1 Before executing any project, the coordinates of the object at the stage are X=10 and Y=10. ()
- 2 In the Scratch program, students face difficulties in sharing projects with others. ()
- 3 Robots use communication tools to interact with users or other robot. ()
- 4 Self-driving cars rely entirely on artificial intelligence. ()

- 5 Python is considered an interpreted language because it translates the code line by line. ()
- 6 In Python, the NumPy library is used in data science, statistics, and artificial intelligence. ()

Model Exam

5

1 Choose the correct answer:

- 1 The first step in the operation of the sensor is
 a. transmitting b. sensing c. transduction
- 2 The "Sprite" in Scratch represents a/ an
 a. background b. object or character c. command block
- 3 To move the pen to a specific point, use the block.
 a. Go to x: y: b. Turn 15 degrees c. Move 10 steps
- 4 Python is programming language.
 a. a free b. an open source c. all of them
- 5 The structure of a robot can be made of materials, such as
 a. metals b. plastic c. all of them

2 Put (✓) or (X):

- 1 General artificial intelligence is more advanced. ()
- 2 Smart shopping gives you suggestions for products you might like. ()
- 3 The design of the structure affects the weight of the robot and its ability to move. ()
- 4 The Scratch program is paid. ()
- 5 The sprites used in the project appear in the Sprites area. ()

3 Choose the right scientific term for the following statements: (Narrow AI - Python)

- 1 It is a programming language widely used in data science, machine learning, and web development.
- 2 It focuses on specific tasks, such as face recognition or language translation.

Model Exam

6

1 Choose the correct answer:

- 1 To know the type of the variable statement in Python language, use the function.
 a. Cos() b. Type() c. Print() d. Sin()
- 2 To measure body temperature without direct contact, use the sensors.
 a. ultrasonic b. visible light c. laser d. infrared
- 3 To repeat the object's movement many times on the stage in Scratch program, use
 a. Repeat b. Move c. Wait d. Delete
- 4 Solving the problems that are difficult for humans to solve easily is a type of an artificial intelligence named
 a. General b. Narrow c. Super d. accurate
- 5 The default extension of the Scratch files is
 a. .sb3 b. .exe c. .zip d. .txt

2 Put (✓) or (X):

- 1 One of the disadvantages of Python is the lack of libraries that you can use. ()

- 2 Artificial intelligence can help doctors diagnose diseases. ()
- 3 The Scratch program is considered a difficult educational tool to use. ()
- 4 The design of the structure affects the weight of the robot and its ability to move. ()
- 5 The first step in the operation of sensors is transmission. ()
- 6 The Start command in the Scratch program is used to stop the project. ()
- 7 Self-driving cars depend entirely on artificial intelligence. ()

Model Exam

7

1 Choose the correct answer:

- 1 The smart vacuum cleaner is a type of robot used for floor cleaning.
 - a. industrial
 - b. household (domestic)
 - c. agricultural
 - d. medical
- 2 Robots help in carrying out some dangerous tasks such as
 - a. dismantling bombs
 - b. mountain climbing
 - c. cleaning homes
 - d. manufacturing electronics
- 3 One of the Artificial Intelligence (AI) applications we use in our daily life is
 - a. the calculator
 - b. instant translation (live/real-time translation)
 - c. programming languages
 - d. the mobile phone
- 4 is an educational tool that allows learning the basics of programming in a fun and engaging way, such as programming games and illustrated stories.
 - a. Artificial Intelligence
 - b. Scratch
 - c. Python
 - d. A robot

- 5 The Scratch program uses a simple visual interface based on a set of placed on top of each other in a specific order to create programs.
 a. Blocks b. Sprites c. Events d. Motions
- 6 In programming languages, represent a reserved location in memory for storing a specific value that can change during program execution.
 a. Constants b. Events c. Variables d. Functions
- 7 Artificial Intelligence is a type of AI that can discover new things that we could not have imagined before.
 a. General b. Narrow c. Broad/Wide d. Super
- 8 The Python programming language is characterized by
 a. being free and open source b. having only one use
 c. being an interpreted language d. being very fast
- 9 In the Scratch program, commands or blocks are moved in the area.
 a. Script/Programming area b. Stage area
 c. Sprites area d. Menu bar
- 10 To repeat the movement of the sprite on the stage a specific number of times, we use the command.
 a. Repeat b. Play Sound
 c. Go to d. Stop

2 Put (✓) or (X):

- 1 A robot is a device that can be programmed to perform a set of tasks automatically. ()
- 2 The personal assistant like the Siri application is one of the Artificial Intelligence applications. ()
- 3 The direction of the sprite in the Scratch program is determined by changing the values of the horizontal (X) and vertical (Y) axes. ()
- 4 The Python language is not suitable for developing websites and applications. ()
- 5 The Scratch program is characterized as being a free program. ()



3 Complete by using words between brackets:

(Sensors - Bluetooth - Strings - Touch Screen - Sprites - Robotic Arm - Motions)

- 1 The sprites used in a Scratch project appear in the area.
- 2 Robots use communication and interaction tools with humans and other robots, such as
- 3 Smartphones contain a group of sensing devices, including the
- 4 The types of variables we use to store texts like names and addresses in the Python language are called
- 5 devices capture information from the surrounding environment and convert it into electrical signals.

Model Exam

8

1 Choose the correct answer:

- 1 Artificial intelligence can solve problems that are difficult for humans to solve easily and discover new things we never imagined before.
 - a. Narrow
 - b. General
 - c. Super
 - d. Precise
- 2 Sensors help robots to
 - a. Teach them new languages
 - b. Increase their size
 - c. Slow down their operations
 - d. Allow them to interact with their environment
- 3 One of the features of the Python language is that it is
 - a. Open source
 - b. Closed source
 - c. Not free
 - d. Limited use
- 4 The Scratch program helps the student to
 - a. Remote controls
 - b. Learn the principles of programming
 - c. 3D scanning
 - d. All of the above

- 5 In production lines, robots can perform repetitive tasks accurately and without any delay, which leads to
- Slow production process
 - Decreased efficiency and productivity
 - Increased efficiency and productivity
 - Lack of product development
- 6 In Scratch program, to add sound effect to the sprite, use the command
- Repeat
 - Choose a Backdrop
 - Play sound
 - Looks

2 Put (✓) or (X):

- Variables in programming languages are a reserved place in memory to store and save a specific value ()
- Artificial intelligence can learn new things slowly ()
- The smart lighting system in the home uses sensors to turn on the lights automatically when someone enters the room ()
- The motors used in robots include electric motors and pneumatic motors ()
- Python is used in developing web applications, data science, artificial intelligence, machine learning, and game programming ()
- In the Scratch program, the student needs to write a lot of complex codes ()

3 Complete by using words between brackets:

(Personal assistant - Interpreted - Artificial intelligence - Sb3

- Remote controls - Docx - Type())

- is a branch of computer science.
- Python translates code line by line, which means it is
Language.

- 3 like Siri or Alexa use artificial intelligence to understand and execute your commands.
- 4 One of the common applications of sensors is the use of infrared rays in
- 5 To know the type of the variable statement, we use the function
- 6 The Scratch file extension is

Model Exam

9

1 Choose the correct answer:

- 1 A common application of sensors is the use of infrared in
 a. Smartphones كتيب الأستاذ b. Remote controls
 c. Vacuum cleaners d. 3D scanning
- 2 To add a new object, press on
 a. Start b. Choose Sprite
 c. Area Blocks d. Stop
- 3 If the movement is too fast, the command from Control Blocks is used. سلسلة كتيب الأستاذ
 a. Wait b. Repeat c. Forever d. Else
- 4 A is a library widely used in data science, statistics, and artificial intelligence.
 a. Pandas b. Matplotlib c. NumPy d. Angular
- 5 To take pictures and videos, we use sensors
 a. Sound b. Touch c. Light d. Vision
- 6 The text value of the variable is placed between the signs
 a. " " b. <, > c. >= d. =<,

2 Put (✓) or (X):

- 1 The first step in the operation of the sensor device is signal conversion. ()
- 2 Python is a free and open-source language, which does not allow anyone to develop it. ()
- 3 Medical robots help doctors performing surgeries. ()
- 4 TAHER, Taher, taheR, TaheR are 4 names of variables in the Python language. ()
- 5 Super artificial intelligence can solve specific problems. ()
- 6 Python can be integrated with other languages such as C, C++, and Java. ()

3 Complete the following sentences:

- 1 In the Scratch program, the result of the work or project appears in the
- 2 To display texts, variables, or even the results of mathematical operations, we use the function
- 3 in programming languages are a reserved place in memory to store and save a specific value.
- 4 In Scratch program, to execute the project, click on the icon
- 5 The file extension for Scratch project is
- 6 Artificial intelligence can solve problems that are difficult for humans to solve easily and discover new things we never imagined before.

Model Exam

10

1 Choose the correct answer:

- 1 One of the Common applications of sensors is the use of infrared in
 - a. Smartphones
 - b. Vacuum Cleaners
 - c. Remote controls
 - d. 3D scanning
- 2 Artificial intelligence can solve problems that are difficult for humans to solve easily.
 - a. narrow
 - b. general
 - c. Super
 - d. Precise
- 3 To execute the project, click on the icon
 - a. 
 - b. 
 - c. 
 - d. 
- 4 is a library for analyzing and processing data.
 - a. Pandas
 - b. Matplotlib
 - c. NumPy
 - d. Angular

2 Put (✓) or (X):

- 1 Self-driving cars rely entirely on artificial intelligence. ()
- 2 The robots' work is limited to factories only. ()
- 3 Scratch uses a visual interface based on blocks. ()
- 4 Python is an interpreted language because it translates codes line by line. ()

3 Complete by using words between brackets:

(Scratch - string - Artificial intelligence - motors)

- 1 is a branch of computer science.
- 2 The program helps the student learn the principles of programming.
- 3 The used in robots include electric and pneumatic.
- 4 City = "Cairo", the data type of the variable City is a

Answers

MODEL (1)

1 1 b 2 c 3 a
4 b 5 c

2 1 X 2 ✓ 3 X
4 X 5 ✓

3 1 Narrow AI, General AI
(or Super AI)
2 Sensors, Motors
(or Structure, Controller, etc.)

MODEL (2)

1 1 a 2 c 3 b 4 b
5 c 6 b 7 c

2 1 ✓ 2 X 3 X 4 X
5 ✓ 6 ✓ 7 X

MODEL (3)

1 1 b 2 b 3 b
4 b 5 b

2 1 ✓ 2 ✓ 3 ✓
4 ✓ 5 X

MODEL (4)

1 1 c 2 d 3 b 4 a
5 d 6 a 7 a 8 a
9 a 10 a 11 c 12 a

2 1 X 2 X 3 ✓ 4 X
5 ✓ 6 ✓

MODEL (5)

2 1 b 2 b 3 a
4 c 5 c

2 1 ✓ 2 ✓ 3 ✓
4 X 5 ✓

3 1 Python 2 Narrow AI

MODEL (6)

1 1 b 2 d 3 a
4 c 5 a

2 1 X 2 ✓ 3 X 4 ✓
5 X 6 X 7 X

MODEL (7)

1 1 b 2 a 3 b 4 b
5 a 6 c 7 d 8 a
9 a 10 a

2 1 ✓ 2 ✓ 3 X
4 X 5 ✓

3 1 Sprites
2 Bluetooth
3 Touch Screen
4 Strings
5 Sensors

MODEL (8)

- 1 1 c 2 d 3 a 4 b
5 c 6 c

- 2 1 ✓ 2 ✗ 3 ✓ 4 ✓
5 ✓ 6 ✗

- 3 1 Artificial intelligence
2 Interpreted
3 Personal assistant
4 Remote controls
5 Type()
6 Sb3

MODEL (9)

- 1 1 b 2 b 3 a 4 c
5 c 6 a

- 2 1 ✗ 2 ✗ 3 ✓ 4 ✓
5 ✗ 6 ✓

- 3 1 Stage Area 2 Print()
3 Variables 4 Green Flag
5 sb3 6 Super

MODEL (10)

- 2 1 c 2 c 3 a 4 a

- 2 1 ✗ 2 ✗ 3 ✓ 4 ✓

- 3 1 Artificial intelligence
2 Scratch
3 motors 4 string

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

اختبار شهر ابريل



General Exercises

On Lesson Five



يمكنك حل التدريب
والتصويب إلكترونياً



► If you got ● you need to revise the lesson again.

قم بتقييم نفسك بالعلامات الموضحة وإذا حصلت على ● (غير جيد) قم بمراجعة الدرس مرة أخرى من الصفحة السابقة.

ممتاز ● جيد جداً ● جيد ● غير جيد ●

El-Moasser Exercises

1 Choose the correct answer from a, b, c or d.

- The location of the sprite in Scratch on the platform can be determined by
 - X and Y axes
 - changing of direction
 - name change
 - using the Play sound brick
- is an option that allows adding a new sprite in the sprites area.
 - Delete the object
 - Choose Sprite
 - Change Size
 - Play sound
- In the "Moving the Ball" project, choose from Motion to make the ball move randomly.
 - when clicked
 - Play sound
 - Repeat
 - Go to random position
- is the option required to activate the pen tool.
 - Choose Sprite
 - Add Extension
 - Go to random position
 - Change Size
- A circle can be drawn in Scratch by
 - Moving the pen in a straight line
 - Repeating short lines at different angles
 - Using the Play sound command
 - Changing the name of the sprite

2 Complete the following sentences with the appropriate words in brackets.

(sprites area - Direction - Repeat - Pen blocks - Go to random position)

- an area in the Scratch program that contains the sprites used in the project and is used to modify their properties.
- is a command used to move the sprite to a random location on the platform.
- is a tool from Add Extension that is used to draw geometric shapes.
- A block used to repeat a set of commands a specified number of times.
- is a property that determines the direction in which the object moves on the stage.

3 Put (✓) in front of the correct sentence and (x) in front of the wrong one.

1. The default location of the sprite on the platform is (100, 80). ()
2. The name of the object in the sprite area can be modified by clicking on it and renaming it. ()
3. The "Go to random position" block is used to move the sprite to a random location. ()
4. A new background can be added to the project via the Choose Sprite option. ()
5. The Pen tool is used to draw geometric shapes in Scratch. ()
6. A Sprite can be resized in the Sprites area. ()
7. The "Play sound" block is used to hide the sprite from the stage. ()

Student's Book Exercises

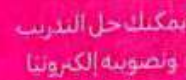
• Put (✓) in front of the correct sentence and (x) in front of the wrong one.

1. The sprites used in the project appear in the Sprites area. ()
2. The sprite name can be modified only once. ()
3. The location of the sprite on the platform is determined by the value of the horizontal axis X only. ()
4. The horizontal and vertical axis are used to know the current location of the sprite on the platform. ()
5. To modify the name of the sprite, click on its current name and rename it. ()
6. The direction of the sprite's movement can be changed by clicking on the word Direction. ()
7. The sprite can be shown or hidden on the platform by clicking on Choose Sprite. ()
8. The size of the sprite is changed by its value in the Sprites area. ()
9. The sprite can be deleted from the platform. ()
10. Only one sprite can be added to the platform. ()
11. To add a new sprite, click on Choose Sprite. ()
12. The Stop command is used to watch the project execution. ()
13. A new background is inserted for the project through the programming area. ()
14. The Start command is used to stop the project. ()
15. We use the coordinates (x, y) to locate the point on the stage. ()

قم بتلوين الدائرة باللون المناسب لمستواك.



On Lesson Six



● ممتاز ● جيد جداً ● جيد ● غير جيد

El-Moasser Exercises

3. Python libraries provide ready-made solutions to many problems. ()
4. Pandas library is heavily used in data science, statistics and artificial intelligence. ()
5. There is no library for data analysis and processing in Python. ()

Student's Book Exercises

1 Put (✓) in front of the correct sentence and (x) in front of the wrong one.

1. Python is a free and open-source language, which does not allow anyone to develop it. ()
2. It is not permissible to create applications and websites in Python. ()
3. Python uses data science and machine learning. ()
4. Python is an interpreted language because it translates programming codes line by line. ()
5. Python is used in developing web applications, data science, artificial intelligence, machine learning, and game programming. ()
6. Python is one of the most difficult programming languages. ()
7. Python can be integrated with other languages such as C, C++, and Java. ()
8. One of the disadvantages of Python is the lack of libraries that you can use. ()
9. NumPy: is a library used in data science, statistics, and artificial intelligence. ()
10. Pandas: is a library for analyzing and processing data. ()

2 Download Python from the official website and arrange the following steps in the correct order.

1. You must choose 64bit or 32bit, depending on your device specifications. (.....)
2. Visit the official Python website www.python.org. (.....)
3. Choose the system you are working on (Windows, Mac, or Linux). (.....)
4. After downloading, install the program on your device and follow the instructions. (.....)
5. Choose "Downloads". (.....)

قم بتلوين الدائرة باللون المناسب لمستواك.



General Exercises

On Lesson Seven



يمكنك حل التدريب
وتصويبه إلكترونياً



► If you got ● you need to revise the lesson again.

قم بتقييم نفسك بالعلامات الموضحة وإذا حصلت على ● (غير جيد) قم بمراجعة الدرس مرة أخرى من الصفحة السابقة.

ممتاز ● جيد جداً ● جيد ● غير جيد

El-Moasser Exercises

1 Choose the correct answer from a, b, c or d.

1. Textual variables can store
a. strings
b. boolean
c. numbers
d. none of the above
2. function is used to display text or values on the output screen.
a. Type ()
b. print ()
c. Input ()
d. output ()
3. Through the codes are written, saved and later executed.
a. browser
b. text editor
c. photoshop
d. paint
4. The function "....." is used to know the variable type.
a. type ()
b. print ()
c. input ()
d. output ()

2 Complete the following sentences with the appropriate words in brackets.

(interactive Python interface – underscore – strings – Booleans)

1. are a type of variable that takes values true or false.
2. The is installed when Python is installed.
3. The variable name begins with a letter or an

3 Put (✓) in front of the correct sentence and (x) in front of the wrong one.

1. A variable is an unreserved place to store fixed values that cannot be changed. ()
2. When naming a variable you must start with a number. ()
3. Variable values can be changed by code. ()
4. Reserved words may be used in Python because they express certain values that the program understands. ()
5. Boolean values take values (3 – 4 – 5). ()
6. The use of uppercase and lowercase letters can be ignored when naming a variable. ()

Student's Book Exercises

1 Put (✓) in front of the correct sentence and (x) in front of the wrong one.

1. Variables in programming languages are a reserved place in memory to store and save a specific value. ()
2. The variable name must not begin with a letter or an underscore sign _. ()
3. TAHER, Taher, taheR, TaheR are 4 names for variables in the Python language. ()
4. The change name contains letters (A-Z) , numbers or an underscore sign _. ()
5. When naming variables, reserved words in the Python language may be used. ()
6. Y= 10 The statement type of the variable Y is numeric for an integer. ()
7. City = "Cairo" The statement type of the variable City is text. ()
8. Is_taher_student = False The statement type of the variable Is_taher_student is logical. ()
9. To know the type of the variable, we do not need to use the type () function. ()
10. The texts of variables are placed between single quotation marks ' ' or double quotation marks " ". ()

2 Choose the correct answer from a, b, c or d.

1. The function is used to display texts or values on the output screen
a. Cos() b. Type() c. Print() d. Sin()
2. The text value of the variable is placed between the signs
a. "" b. <> c. >= d. =<
3. To display texts, variables, or even the results of mathematical operations, we use the function
a. Cos() b. Type() c. Print() d. Sin()
4. To know the type of variable statement, we use the function
a. Cos() b. Type() c. Print() d. Sin()

قم بتلوين الدائرة باللون المناسب لمستواك.



حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

اختبار شهر ابريل



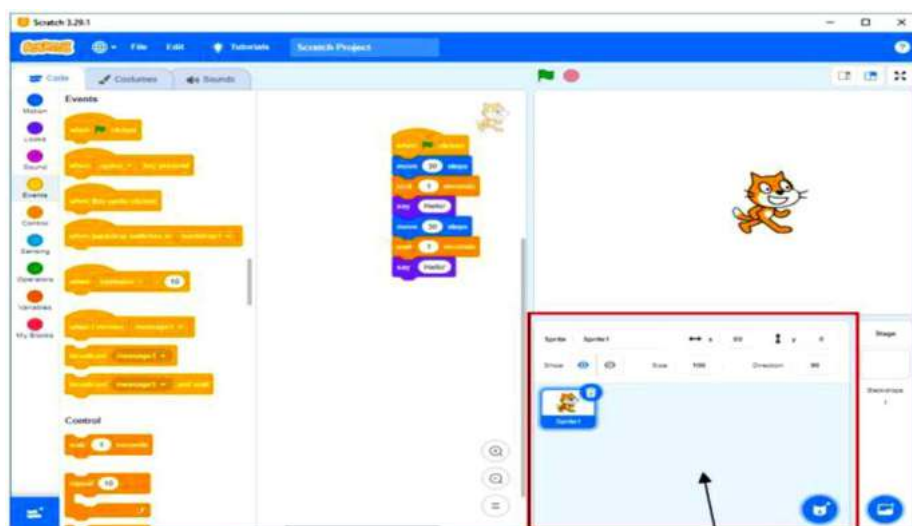
Lesson 5 Sprites Area in Scratch

Engage:

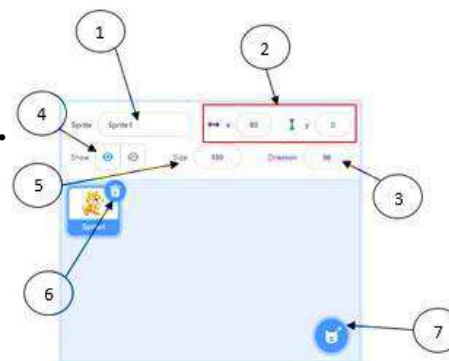
How can you set up a simple project on Scratch?

Learn

Sprites area (contains the sprites used in the project), sprites used in the project appear as follows:



- 1-The name of the sprite (you can modify it by clicking on it and renaming it).
- 2-The location of the sprite and determines it (the horizontal axis is the X values and the vertical axis is the Y values, note the current location of the sprite (cat) on the platform is ((60,0)
- 3-The direction of the sprite's movement:
(You can change the direction by changing the Direction value).
- 4-Show or hide the sprite on the platform.
- 5-The size of the sprite and its value can be changed.
- 6-Delete the sprite from the platform.
- 7-Add a new sprite Choose Sprite.



Activity:

With the help of your teacher, make the following changes to the Sprite:

- 1-The name of the sprite (you can modify it).
- 2-The location of the sprite on the platform is (100,80)
- 3-The direction of the sprite's movement.
- 4-Show or hide the sprite from the platform.
- 5-The size of the sprite to the value 50.
- 6-Delete the sprite from the platform.
- 7-Add a new sprite.

Add a new sprite:

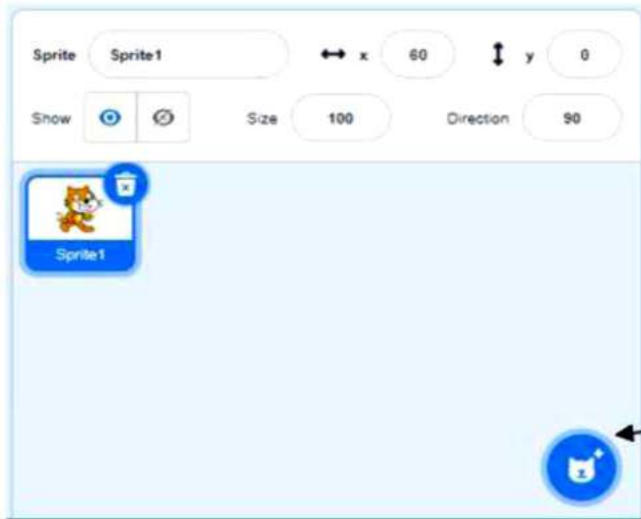
To add a new sprite in the sprites area

-Click on Choose Sprite



Select Basketball

-Remove the cat sprite from the stage



Project 2:

Required to move the ball randomly on the platform while making a sound for the ball and repeating this 10 times

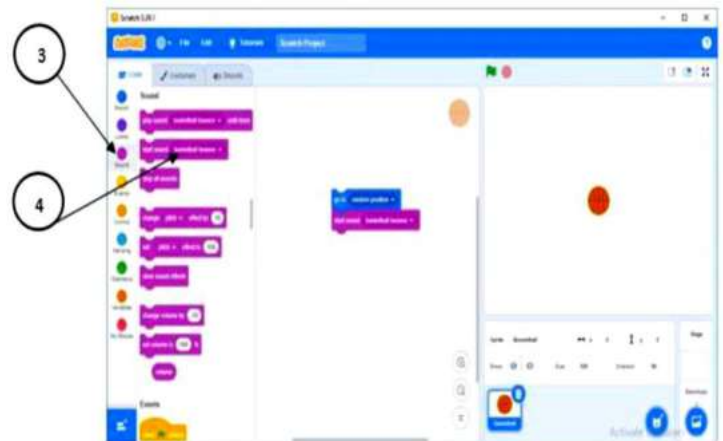
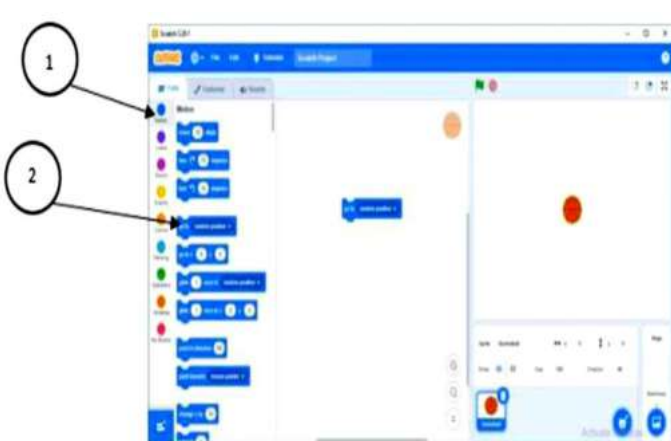
Project creation steps:

1-From Motion

2-Choose the Go to random position command

3-From Sound

4-Choose the command Play sound



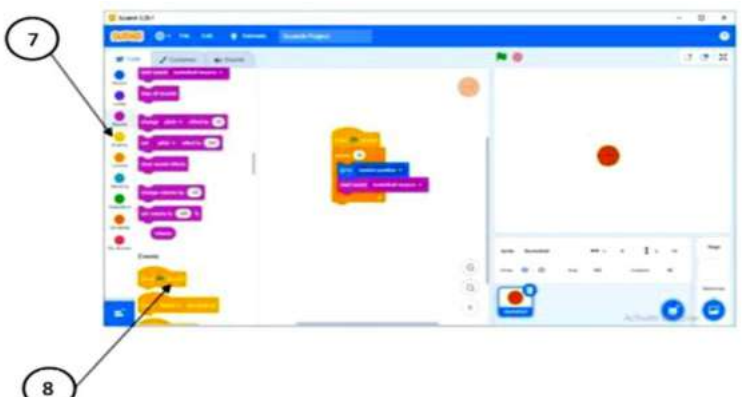
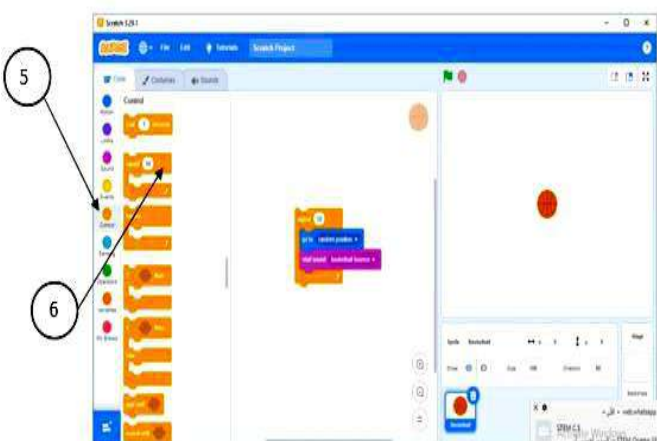
5-To repeat the movement 10 times from Control

To execute the project

7-From Events

8-Choose the When Clicked command

Test the execution of the project



Class evaluation

Homework:

Choose the appropriate answer to complete the following statements:

1- The file extension for Scratch project is

A- Docx B- Sb3 C- bmp D- Jpg

2. To execute the project's steps, use the command embedded at the beginning of the code segment.

A- 

B- 

C- 

D - 

Weekly evaluation: AFor the first test

Put the (✓) correct statement or the (x) incorrect statement.

1. In the Scratch program, a code segment is a combination of commands arranged in a specific order. ()

2. Before executing any project, the coordinates of the object on the stage are X=10 and Y=10. ()

Weekly evaluation: AFor the second test

Put the (✓) correct statement or the (x) incorrect statement.

1 In the Wait command, the wait value of 1 represents (1 second). ()

2. The object's position on the stage is determined by the value of the horizontal axis X and the vertical axis Y. ()

Weekly evaluation: AFor the third test

Put the (✓) correct statement or the (x) incorrect statement.

1 We use click and drag-and-drop to interact with any command (inside) the code segment. ()

2. To make the movement continuous, you can assemble the command several times. ()

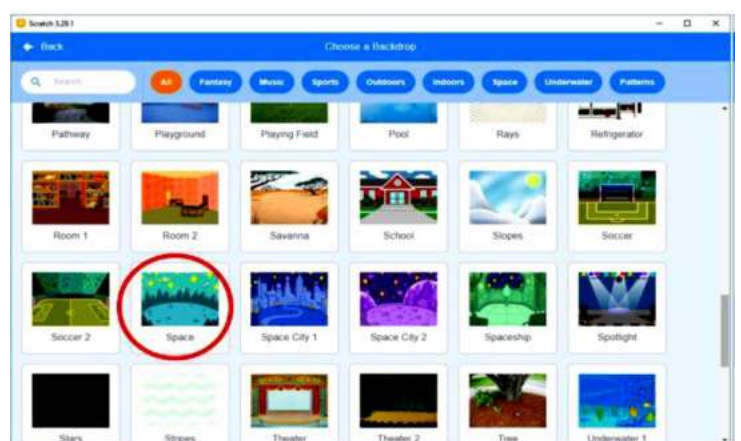
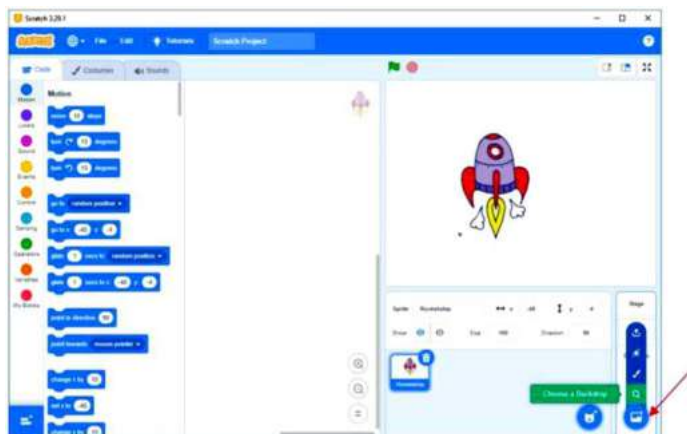
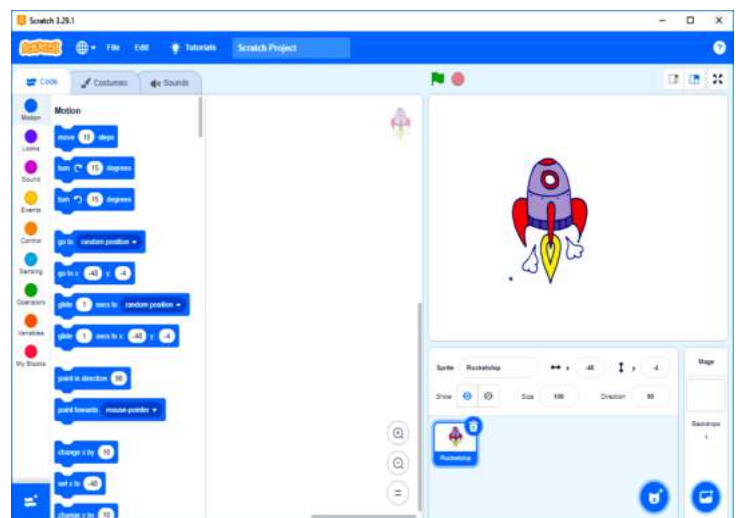
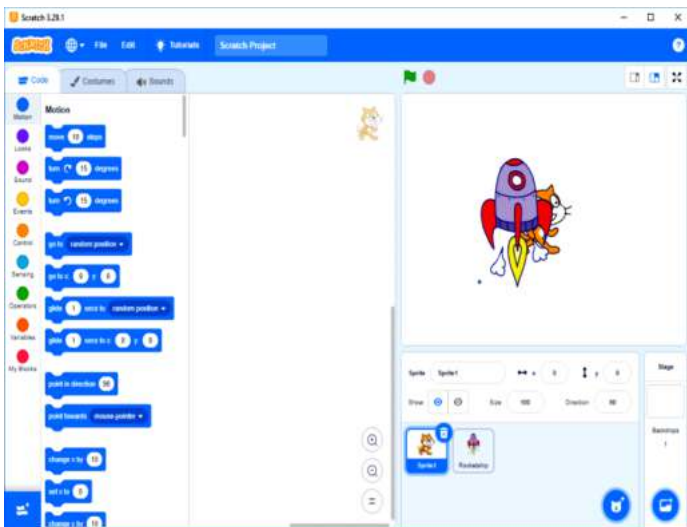
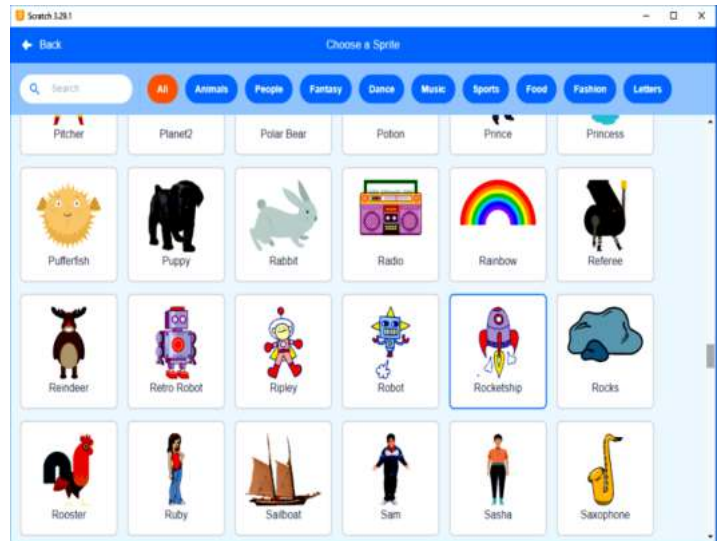
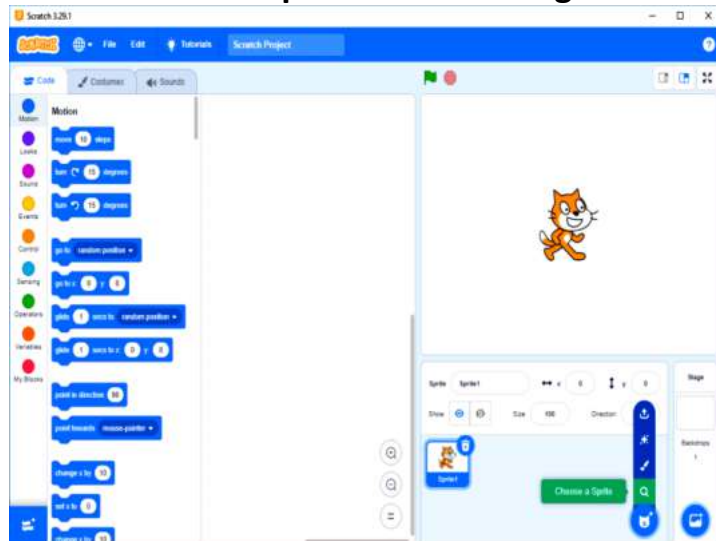
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Lesson 5 Sprites Area in Scratch

Project (3) Spaceship

- Insert a new sprite Rocketship
- Remove the cat sprite from the stage.



- Insert a new background by clicking on Choose a Backdrop, browse through the different backgrounds and then choose “Space”.**

**With the help of your teacher and in cooperation with your colleagues, do the following:
Make the spaceship move randomly, make a sound for the spaceship, change the size of the
spaceship, repeat this 5 times, make the spaceship's location on the platform start from (0, 0)**



With the help of your teacher and in cooperation with your classmates, do the following:

1. Open a new project: Open Scratch and start a new project.



Pen

- erase all
- stamp
- pen down
- pen up
- set pen color to ff00ff
- change pen color ▾ by 10
- set pen color ▾ to 50
- change pen size by 1
- set pen size to 1

3. Setting Color and Size: Before you start drawing, you can set the line color and size using the blocks in the “Pen” section. For example, you can use the “Set Pen Color to” block to choose a specific color, and the “Set Pen Size to” block to set the line thickness.

5. Repeating Steps: Repeat the previous steps to draw more lines and form the shape you want.

— **Drawing different shapes:** You can draw any geometric shape by setting the start and end points of the lines appropriately.

when clicked

pen down

set pen color to

set pen size to 5

go to x: 0 y: 0

go to x: 111 y: 111

short lines at

To draw a circle, you can use the "Repeat" block to repeat the process of drawing short lines at different angles, this helps with the circle drawing effect.

Learn by doing

Put a check mark (✓) in front of the correct sentence and a check mark (✗) in front of the incorrect sentence.

- 1- The sprites used in the project appear in the Sprites area ()
- 2- The sprite name can be modified only once. ()
- 3- The location of the sprite on the platform is determined by the value of the horizontal axis X only. ()
- 4- The horizontal and vertical axis are used to know the current location of the sprite on the platform. ()
- 5- To modify the name of the sprite, click on its current name and rename it. ()
- 6- The direction of the sprite's movement can be changed by clicking on the word Direction. ()
- 7- The sprite can be shown or hidden on the platform by clicking on Choose Sprite. ()
- 8- The size of the sprite is changed by its value in the Sprites area ()
- 9- The sprite can be deleted from the platform ()
- 10- Only one sprite can be added to the platform. ()
- 11- To add a new sprite, click on Choose Sprite. ()
- 12- The Stop command is used to watch the project execution ()
- 13- A new background is inserted for the project through the programming area. ()
- 14- The Start command is used to stop the project. ()
- 15- We use the coordinates (x, y) to locate the point on the stage. ()

Class evaluation

Homework:

Choose the appropriate answer to complete the following statements:

1 In Scratch, to repeat the sprite's movement, we use the

A- Start

B- Choose Sprite

C- Command Blocks Area

D- Stop

2. In Scratch program, to add sound effect to the sprite, use the command

A- Repeat

B- Looks

C- Play sound

D- Choose a Backdrop

Weekly evaluation: AFor the first test

Put the (√) correct statement or the (x) incorrect statement.

1 In Scratch, we use the coordinates (x, y) to determine the location of a point on the stage. ()

2. To modify the name of the sprite, click on its current name and rename it. ()

Weekly evaluation: AFor the second test

Put the (√) correct statement or the (x) incorrect statement.

1 In Scratch, the name of the sprite can be changed multiple times. ()

2. The sprite cannot be deleted from the stage. ()

Weekly evaluation: AFor the third test

Put the (√) correct statement or the (x) incorrect statement.

1 In Scratch, the horizontal and vertical axes are used to determine the current position of the sprite on the stage. ()

2. The sprites used in the project appear in the Sprites area. ()

Lesson 6 Principles of Python

Engage:

What is Python programming language? How can the application be downloaded from the official website?

Learn What is Python:

Before we start defining Python, we must know that the first version of the language was in 1991. It is a programming language widely used in data science and machine learning, and for developing websites and applications.

Features of Python:

- 1.Open source:** Python is free and open source, allowing everyone to use and develop it.
- 2.Interpreted language:** Which means that it translates programming codes line by line, so if there are errors in the program code, it will stop working, as programmers can quickly find errors in the codes.
- 3.Versatility:** It can be used in developing web applications, data science, artificial intelligence, machine learning, and game programming.
- 4.Easy-to-use language:** It is one of the easiest programming languages for beginners because of its simple and organized formula and uses words similar to English, unlike other programming languages.
- 5.Integration:** Python can be integrated with other languages such as C, C++, and Java, and it can also be used in developing multi-platform programs.
- 6.Libraries:** Python has many libraries that you can use.

Python Libraries

They are pre-built codes and functions that help programmers perform specific tasks without having to write codes from scratch, libraries are a powerful tool that increases the efficiency and effectiveness of programming using Python, as they provide ready-made solutions to many common problems or requirements.

like:

NumPy: is a library widely used in data science, statistics, and artificial intelligence.

Pandas: is a library for analyzing and processing data.

Matplotlib: is a library for creating graphs and charts

Class evaluation

Homework:

Choose the appropriate answer to complete the following statements:

1- One of the advantages of Python is that it

A- Open source

B- Closed source

C- Not free

D- Limited use

2- Python translates code line by line, which means it language.

A- A complex. B- interpreted C- Closed source. D- Not integrated.

Weekly evaluation: A

Put the (✓) correct statement or the (x) incorrect statement.

1 Python is considered one of the most difficult programming languages. ()

2. Python is used in data science and machine learning. ()

Weekly evaluation: AFor the second test

Put the (✓) correct statement or the (x) incorrect statement.

1 Python is considered an interpreted language because it translates code line by line. ()

2. It is not possible to create applications and websites using Python ()

Weekly evaluation: AFor the third test

Put the (✓) correct statement or the (x) incorrect statement.

1 Python is considered a free and open-source language, which does not allow anyone to develop it. ()

2. Python is used in web application development, data science, artificial intelligence, machine learning, and game programming. ()

The date/...../.....

The day :.....

Lesson 6 Principles of Python

How to download the program from the official website:

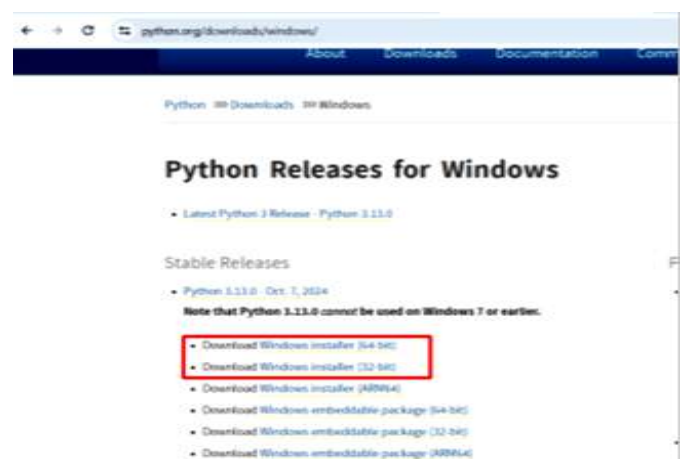
1-Visit the official Python website www.python.org



2-Choose “Download”

3-Then choose the system you are working on (Windows, Mac, or Linux).

4-You must choose 64 bit or 32 bit, according to your device specifications.



5-After downloading, install the program on your device and follow the instructions.



Learn by doing

Put a check mark (✓) in front of the correct sentence and a check mark (×) in front of the incorrect sentence.

- 1- Python is a free and open-source language, which does not allow anyone to develop it. ()
- 2- It is not permissible to create applications and websites in Python ()
- 3- Python uses data science and machine learning. ()
- 4- Python is an interpreted language because it translates programming codes line by line. ()
- 5- Python is used in developing web applications, data science, artificial intelligence, machine learning, and game programming ()
- 6- Python is one of the most difficult programming languages. ()
- 7- Python can be integrated with other languages such as C, C++, and Java ()
- 8- One of the disadvantages of Python is the lack of libraries that you can use. ()
- 9- NumPy: A library used in data science, statistics, and artificial intelligence ()
- 10- Pandas: A library for analyzing and processing data. ()

Download Python from the official website and arrange the following steps in the correct order.

- 1-You must choose 64bit or 32bit, depending on your device specifications.
- 2-Visit the official Python website www.python.org
- 3-Choose the system you are working on (Windows, Mac, or Linux).
- 4-After downloading, install the program on your device and follow the instructions.
- 5-Choose "Downloads"

Class evaluation

Homework:

Choose the appropriate answer to complete the following statements:

1- The official website of Python is

A- www.python.org

B- www.python.edu

C- www.pythonlibr.adp

D- www.application.org

2- is a library widely used in data science, statistics, and artificial intelligence.

A- Pandas

B- Matplotlib

C- NumPy

D- Angular

Weekly evaluation: AFor the first test

Put the (✓) correct statement or the (x) incorrect statement.

1- In Python, the NumPy library is used in data science, statistics, and artificial intelligence. ()

2. One of the disadvantages of Python is the limited libraries that you can use. ()

Weekly evaluation: AFor the second test

Put the (✓) correct statement or the (x) incorrect statement.

1 Python can be integrated with other languages such as C, C++, and Java. ()

2. Pandas is a library for data analysis and manipulation in Python. ()

Weekly evaluation: AFor the third test

Put the (✓) correct statement or the (x) incorrect statement.

1 When installing Python, you need to choose between 64bit or 32bit, based on your device specifications. ()

2. Matplotlib: is a library for data analysis and manipulation. ()

Lesson7 Variables in Python

Engage:

What are variables in programming languages? How can they be written and classified?

Learn

Variables in programming languages express a reserved place in memory to store and save a specific value, where the value can change (example: Taher= 20) In this example, we expressed a variable named (Taher) and its value is equal to (20), where you can change the value of the variable while dealing with the program immediately during the execution of the program.

Conditions for naming variables in Python:

- 1.The variable name begins with a letter or an underscore _.
- 2.The change name contains letters (A-Z) or numbers or an underscore _
- 3.Reserved words may not be used in Python because they express specific values that the program understands (example: False) A reserved word within the program is a word that indicates a reserved value (logical value)

Dear student... When writing a variable name, you must take into account placing the variable names in upper and lowercase letters (example: TAHER, Taher, taher, TaheR) In the previous example, the variable names refer to four variables and not one variable.

Types of variables in Python

1-Numbers: Used to store numerical values such as integers (int) and decimals (float).

Integer variables:

X= 5

Y= 10

Decimal variables:

Z= 5.25

A= 8.32

2-Strings: Used to store texts such as names and addresses.

Texts are placed between single quotes ' ' or double quotes " "

Name = "Taher"

City = 'Cairo'

3-Booleans: A data type that contains only two values True or False

Often used in comparisons and decision making in codes

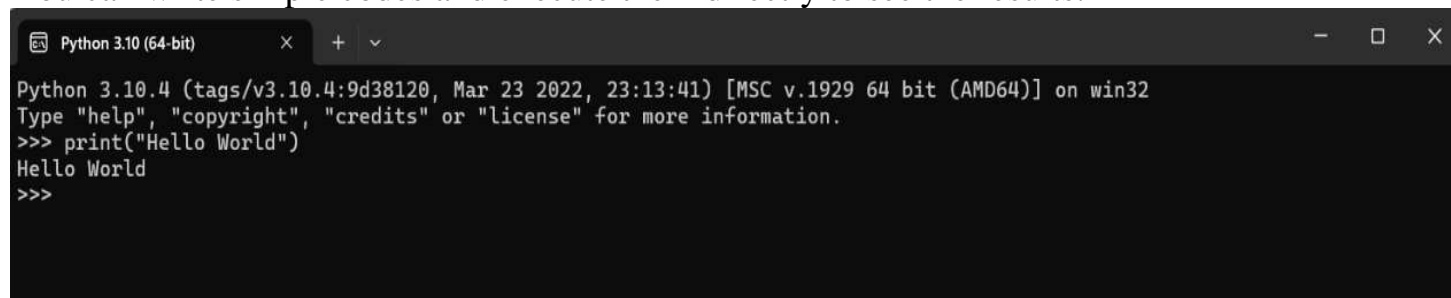
Is_taher_student = False

Is_taher_a_teacher = True

Python program interface

1-Through the interactive Python interface (Python Shell):

You can write simple codes and execute them directly to see the results.

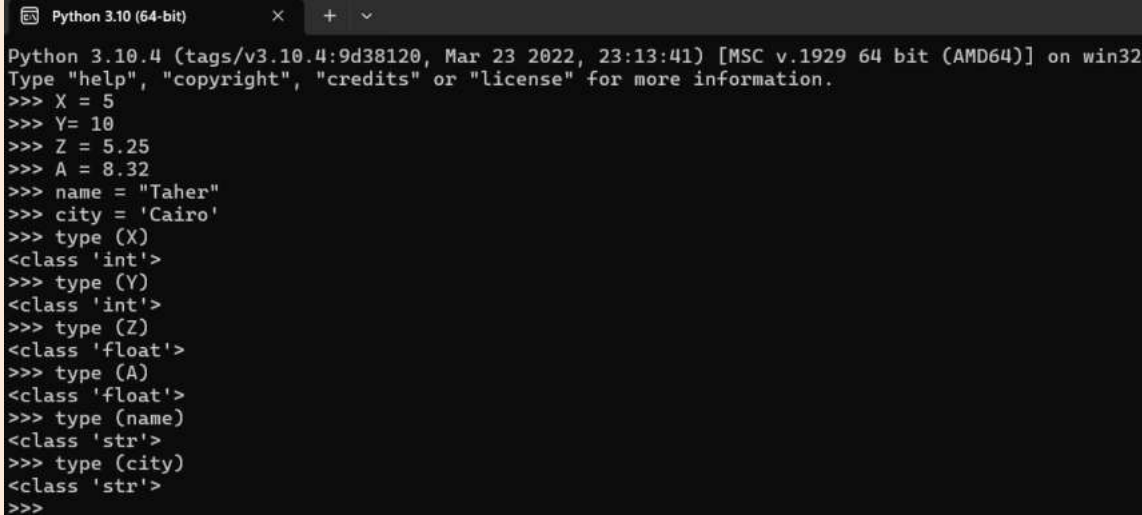


```
Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello World")
Hello World
>>>
```

2-Text editor: It allows you to write longer and more complex codes and save them to run later.

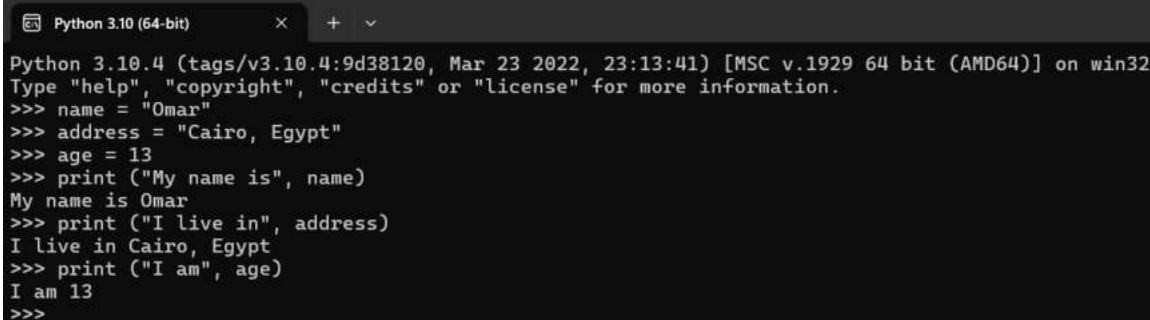
The interactive Python interface is installed when you install the Python language, and there is no need to download it, unlike a text editor that must be downloaded from the Internet, such as Visual Studio and PyCharm

To know the type of the variable you can use the type () function



```
Python 3.10 (64-bit)
Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> X = 5
>>> Y = 10
>>> Z = 5.25
>>> A = 8.32
>>> name = "Taher"
>>> city = 'Cairo'
>>> type(X)
<class 'int'>
>>> type(Y)
<class 'int'>
>>> type(Z)
<class 'float'>
>>> type(A)
<class 'float'>
>>> type(name)
<class 'str'>
>>> type(city)
<class 'str'>
>>>
```

Simple Python Code Using Variables



```
Python 3.10 (64-bit)
Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> name = "Omar"
>>> address = "Cairo, Egypt"
>>> age = 13
>>> print("My name is", name)
My name is Omar
>>> print("I live in", address)
I live in Cairo, Egypt
>>> print("I am", age)
I am 13
>>>
```

The print function () in Python is one of the most commonly used functions, used to display text or values on the output screen. It can be used to display text, variables, or even the results of mathematical operations

Learn by doing

Put a check mark (✓) in front of the correct sentence and a check mark (✗) in front of the incorrect sentence.

- 1- Variables in programming languages are a reserved place in memory to store and save a specific value. ()
- 2- The variable name must not begin with a letter or an underscore sign _ ()
- 3- TAHER, Taher, taher, TaheR are 4 names for variables in the Python language. ()
- 4- The change name contains letters (A-Z) or numbers or an underscore sign _ ()
- 5- When naming variables, reserved words in the Python language may be used. ()
- 6- Y= 10 The statement type of the variable Y is numeric for an integer ()
- 7- City = "Cairo" The statement type of the variable City is text ()
- 8- Is_taher_student = False The statement type of the variable Is_taher_student is logical. ()
- 9- To know the type of the variable, we do not need to use the type () function. ()
- 10- The texts of variables are placed between single quotation marks ' ' or double quotation marks " " ()

Choose the correct answer from the following.

1.The function is used to display texts or values on the output screen

- A.Cos() B.Type().
C.Print(). D.Sin().

2.The text value of the variable is placed between the signs

- A."" B.<>.
C.>=. D.=<.

3.To display texts, variables, or even the results of mathematical operations, we use the function

- A.Cos() B.Type().
C.Print(). D.Sin().

4.To know the type of the variable statement, we use the function

- A.Cos() B.Type().
C.Print(). D.Sin().

Class evaluation

Homework:

Choose the appropriate answer to complete the following statements:

1- The function is used to display text or values on the output screen.

a- Cos() b- Type() c- Print() d- Sin()

2- To determine the data type of a variable, we use the function

a- Pandas b- Matplotlib c- NumPy d- Type()

Weekly evaluation: AFor the first test

Put the (✓) correct statement or the (x) incorrect statement.

1 In Python, when naming variables, reserved words can be used. ()

2. To determine the type of a variable, we do not need to use the **type()** function. ()

Weekly evaluation: AFor the second test

Put the (✓) correct statement or the (x) incorrect statement.

1 A variable name cannot start with a letter or (_) character. ()

2. Y = 10, the data type of variable Y is an integer. ()

Weekly evaluation: AFor the third test

Put the (✓) correct statement or the (x) incorrect statement.

1- Text value for variables are placed between single quotes ' ' or double quotes '". ()

2. City = "Cairo", the data type of the variable City is a string. ()

Class evaluation

Homework:

Choose the appropriate answer to complete the following statements:

1- To display text, variables, or even the results of arithmetic operations, we use the function

.....
A- Cos() B- Type() C- Print() D- Sin()

2 -The string value of a variable is placed between the marks

A- "" B- < > B- >= D- <=

Weekly evaluation: AFor the first test

Put the (✓) correct statement or the (x) incorrect statement.

- 1 The variable name can contain letters (A-Z), numbers, or the underscore _ . ()
2. (Is_taher_student = False), the data type of the variable (Is_taher_student) is Boolean. ()

Weekly evaluation: AFor the second test

Put the (✓) correct statement or the (x) incorrect statement.

- 1 Variables in programming languages are reserved places in memory to store and hold a specific value. ()
2. TAHER, Taher, taher, TaheR are 4 variables names for variables in Python. ()

Weekly evaluation: AFor the third test

Put the (✓) correct statement or the (x) incorrect statement.

- 1 The text editor allows you to write longer and more complex codes and save them to run later. ()
2. To determine the type of a variable, you can use the **Len()** function. ()

حمل الآن

مجاناً وحصرياً

المراجعة رقم (4)

اختبار شهر ابريل

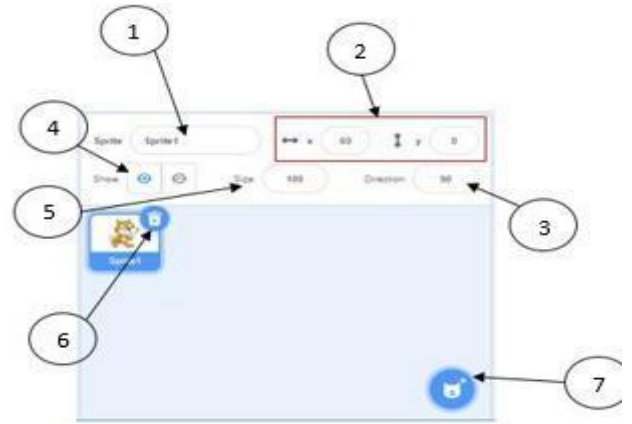


Lesson 5 Sprite area in Scratch



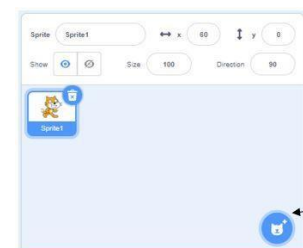
➤➤➤ **Sprites area** (contains the sprites used in the project)

- 1- The name of the sprite (you can modify it by clicking on it and renaming it).
- 2- The location of the sprite and determines it (the horizontal axis is the X values and the vertical axis is the Y values, note the current location of the sprite (cat) on the platform is ((60,0)
- 3- The direction of the sprite's movement: (You can change the direction by **changing the Direction value**).
- 4- Show or hide the sprite on the platform.
- 5- The size of the sprite and its value can be changed.
- 6- Delete the sprite from the platform.
- 7- Add a new sprite Choose Sprite.



➤➤➤ **Add a new sprite:**

- Click on -Choose Sprite



-Choose Basketball



- Remove the cat object from the stage



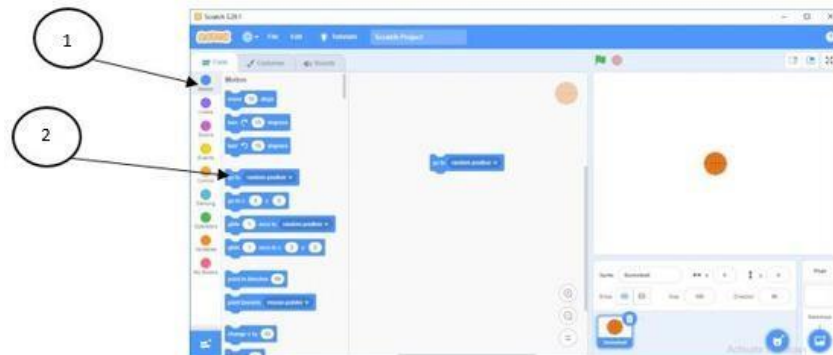
Project 2:

Required to move the ball randomly on the platform while making a sound for the ball and repeating this 10 times

Project creation steps:

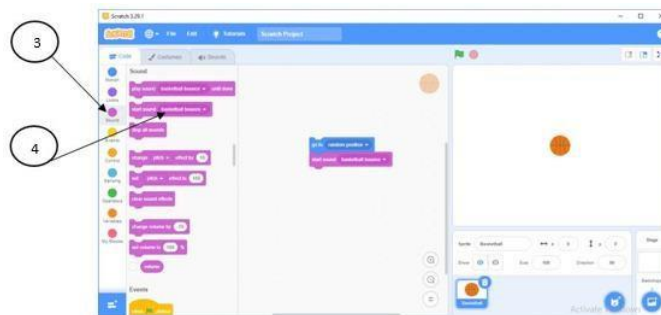
1-From Motion

2-Choose the Go to random position command



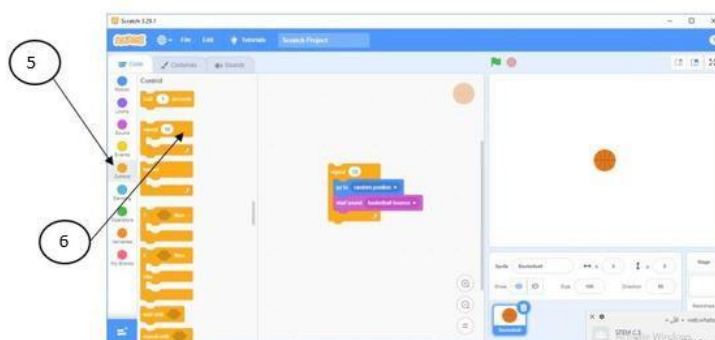
3-From Sound

4-Choose the command Play sound



5-To repeat the movement 10 times from Control

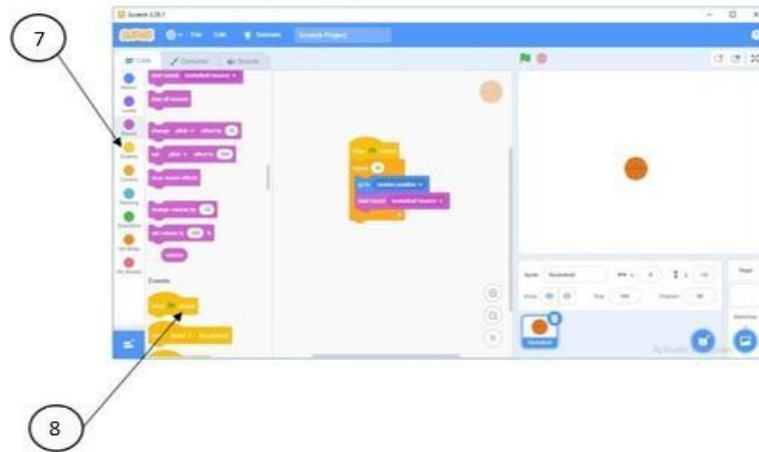
6-Choose the Repeat command.



7-From Events

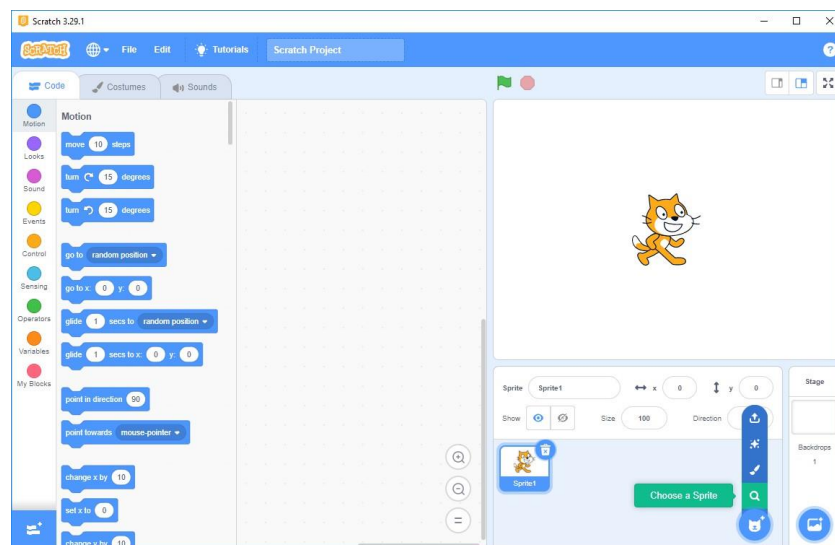
8-Choose the "When Clicked command"

9- Test the execution of the project

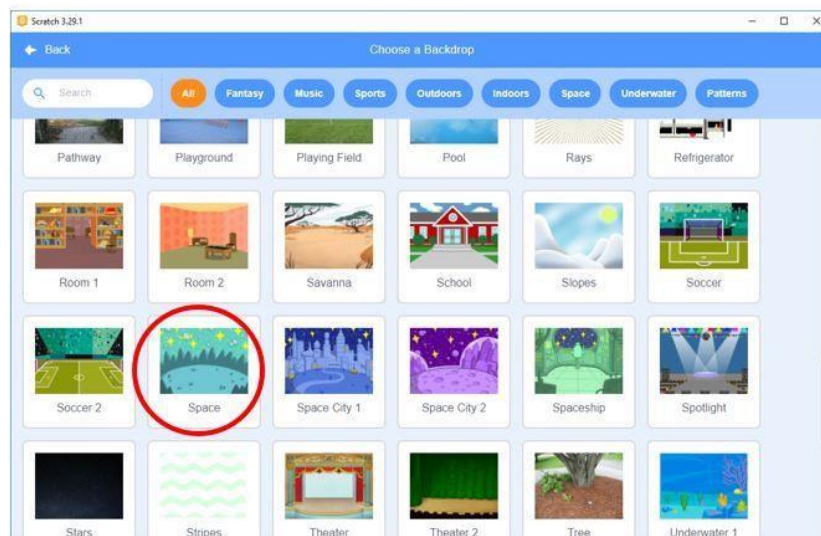


Project (3) Spaceship

-Insert a new sprite Rocketship



-Insert a new background by clicking on Choose a Backdrop, browse through the different backgrounds and then choose "Space".



Square Drawing Project:

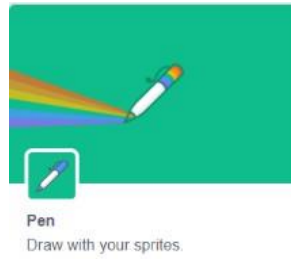
Square Drawing Project:

1. **Open a new project:** Open Scratch and start a new project.

2. **Select the pen:** We will use the "pen" to draw our picture. In the code area, find the "pen" section and drag the "pen" block down. This block will make the pen start drawing

note:

By clicking on Add Extension the pen blocks will appear as shown in the figure.



Blocks will appear as shown in the opposite figure:

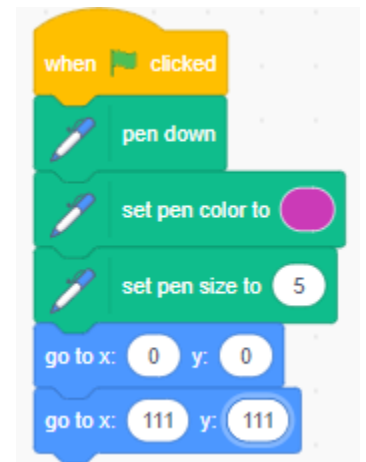
3. **Setting Color and Size:** Before you start drawing, you can set the line color and size using the blocks in the "Pen" section. For example, you can use the "Set Pen Color to" block to choose a specific color, and the "Set Pen Size to" block to set the line thickness.

4. **Moving the Pen:** Now, we will move the pen to draw the shape we want. Use the "Go to x:y:" block to set the starting point, and then use the "Go to x:y:" block again to set the ending point. This will make the pen draw a straight line between the two points.

5. **Repeating Steps:** Repeat the previous steps to draw more lines and form the shape you want.

Notes:

- **Drawing different shapes:** You can draw any geometric shape by setting the start and end points of the lines appropriately.
- **Adding details:** You can add details to your images such as eyes, mouth, and ears.



Project: Drawing a circle

To draw a circle, you can use the "Repeat" block to repeat the process of drawing short lines at different angles, this helps with the circle drawing effect.

Questions and exercises



()

()

Put ✓ or X:-

1. The sprites used in the project appear in the Sprites area. ()
2. The sprite name can be modified only once. ()
3. The location of the sprite on the platform is determined by the value of the horizontal axis X only. ()
4. The horizontal and vertical axis are used to know the current location of the sprite on the platform. ()
5. To modify the name of the sprite, click on its current name and rename it. ()
6. The direction of the sprite's movement can be changed by clicking on the word Direction. ()
7. The sprite can be shown or hidden on the platform by clicking on Choose Sprite. ()
8. The size of the sprite is changed by its value in the Sprites area. ()
9. The sprite can be deleted from the platform. ()
10. Only one sprite can be added to the platform. ()
11. To add a new sprite, click on Choose Sprite. ()
12. The Stop command is used to watch the project execution. ()
13. A new background is inserted for the project through the programming area. ()
14. The Start command is used to stop the project. ()
15. We use the coordinates (x, y) to locate the point on the stage ()



Lesson Six: Principles of Python



Python language definition:-

The first version of the language was in 1991 .

It is a programming language it is widely used in:-

- Data Science
- In machine learning,
- For website and application development

Features of Python language:

1- Open source: Python is free and open source, allowing everyone to use and develop it.

2. Interpreted language: Which means that it **translates programming codes** line by line, so if there are errors in the program code, it will stop working, as programmers can quickly find errors in the codes.

3. Versatility: It can be used in developing web applications, data science, artificial intelligence, machine learning, and game programming.

4. Easy-to-use language: It is one of the easiest programming languages for beginners because of its simple and organized formula and uses words similar to English, unlike other programming languages.

5. Integration: Python can be integrated with other languages such as C, C++, and Java, and it can also be used in developing multi-platform programs.

6. Libraries: Python has many libraries that you can use.

Python Libraries

They are pre-built codes and functions that help programmers perform specific tasks without having to write codes from scratch, libraries are a powerful tool that increases the efficiency and effectiveness of programming using Python, as they provide ready-made solutions to many common problems or requirements.

like:

NumPy: is a library widely used in data science, statistics, and artificial intelligence.

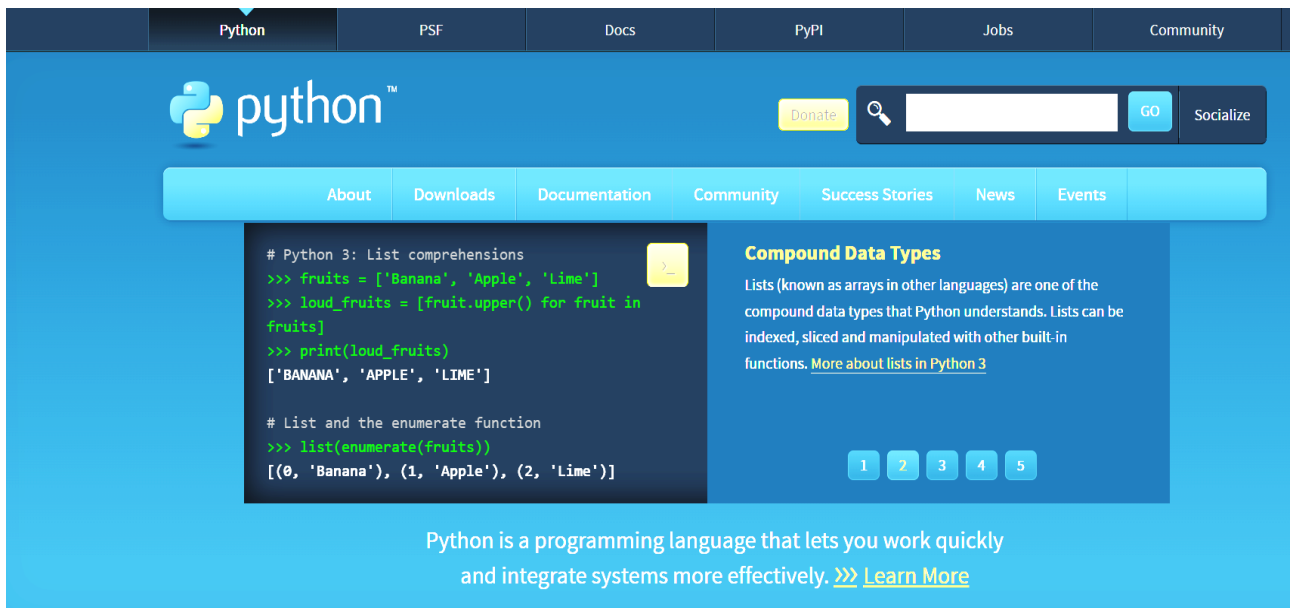
Pandas: is a library for analyzing and processing data.

Matplotlib: is a library for creating graphs and charts

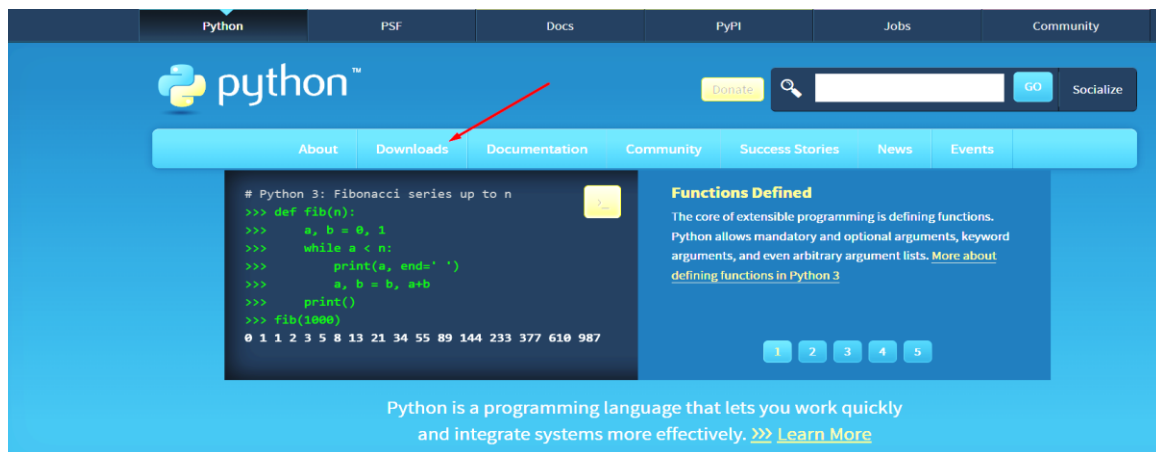
How to download the program from the official website:



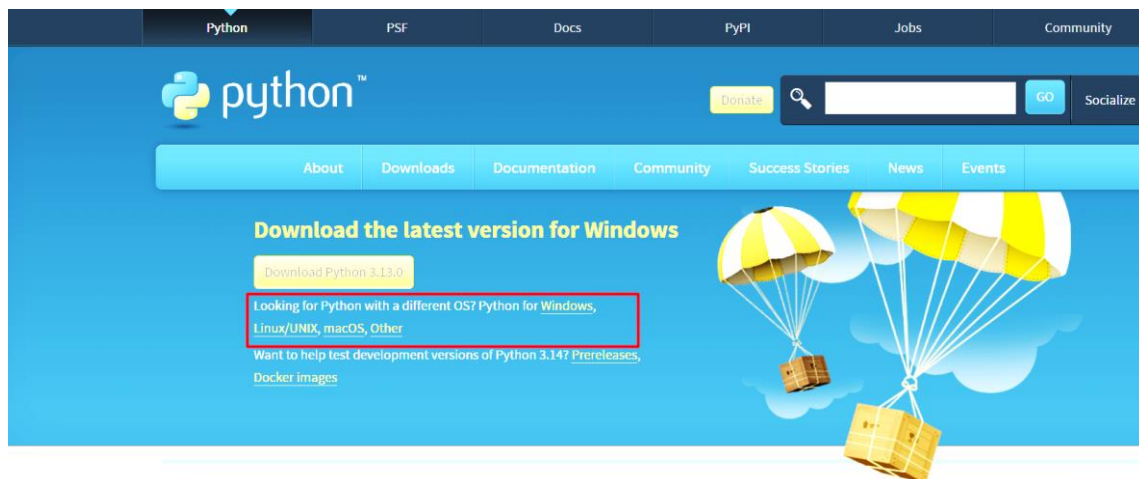
1. Visit the official Python website www.python.org



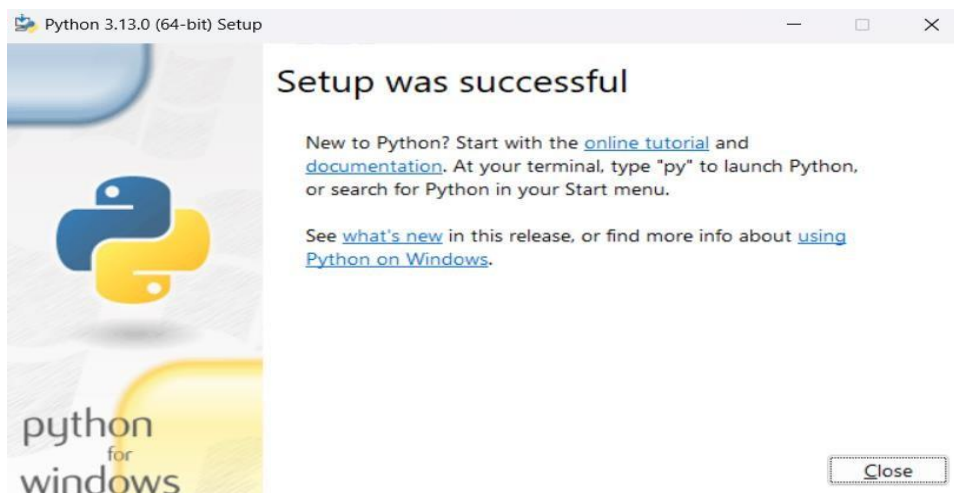
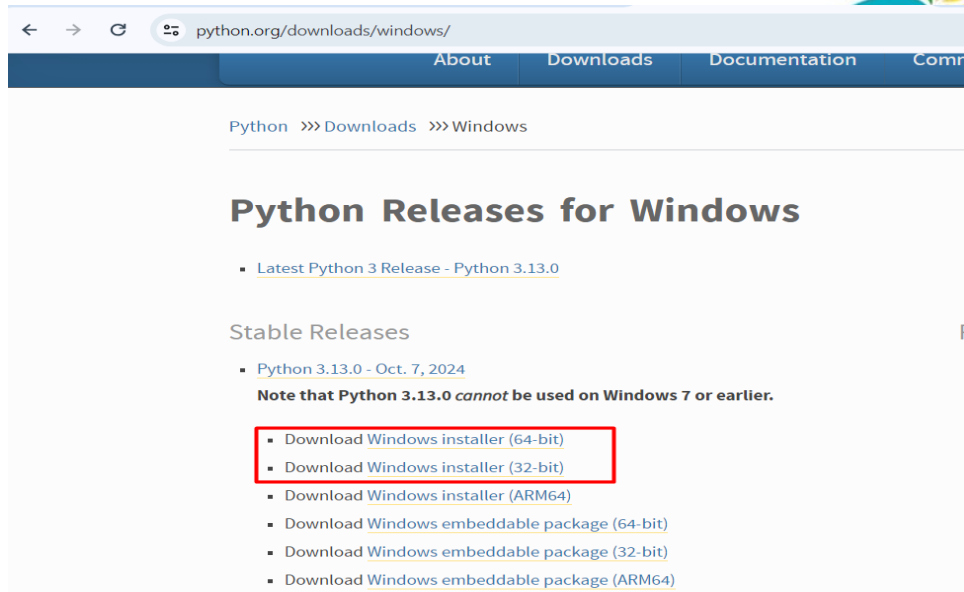
2. Select "Downloads"



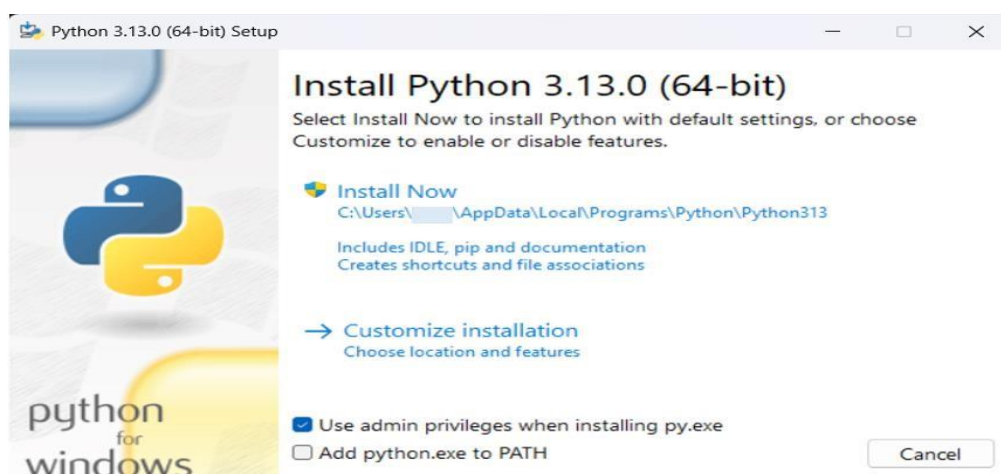
3. Then choose the system you are working on (Windows, Mac, or Linux).



4- You must choose 64 bit or 32 bit, according to your device specifications.



5-After downloading, install the program on your device and follow the instructions



Questions and exercises



Put ✓ or X:-

1. Python is a free and open-source language, which does not allow anyone to develop it. ()
2. It is not permissible to create applications and websites in Python. ()
3. Python uses data science and machine learning. ()
4. Python is an interpreted language because it translates programming codes line by line. ()
5. Python is used in developing web applications, data science, artificial intelligence, machine learning, and game programming. ()
6. Python is one of the most difficult programming languages. ()
7. Python can be integrated with other languages such as C, C++, and Java. ()
8. One of the disadvantages of Python is the lack of libraries that you can use. ()
9. NumPy: A library used in data science, statistics, and artificial intelligence. ()
10. Pandas: A library for analyzing and processing data. ()

Download Python from the official website and arrange the following steps in the correct order.

- 1- You must choose 64bit or 32bit, depending on your device specifications.
- 2- Visit the official Python website www.python.org
- 3- Choose the system you are working on (Windows, Mac, or Linux).
- 4- After downloading, install the program on your device and follow the instructions.
- 5- Choose "Downloads"

Lesson 7: Variables in Python



Definition of variables–: Variables in programming languages express a reserved place in memory to store and save a specific value, where the value can change (example: `Taher= 20`) In this example, we expressed a variable named (`Taher`) and its value is equal to (`20`), where you can change the value of the variable while dealing with the program immediately during the execution of the program

Conditions for naming variables in Python:

1. The variable name begins with a letter or an underscore _.
2. The change name contains letters (A–Z) or numbers or an underscore _
3. Reserved words may not be used in Python because they express specific values that the program understands (example: `False`) A reserved word within the program is a word that indicates a reserved value (logical value)

Note When writing a variable name, you must take into account placing the variable names in upper and lowercase letters (example: `TAHER`, `Taher`, `taher`, `TaheR`) In the previous example, the variable names refer to four variables and not one variable.

Types of variables in Python

1- Numbers: Used to store numerical values such as integers (`int`) and decimals (`float`).

Integer variables:

`X=5`

`– Y=10`

Decimal variables:

`Z=`

`5.25`

`A=`

`8.32`

2- Strings: Used to store texts such as names and addresses.

Texts are placed between single quotes ‘ ’ or double quotes “ ”

`Name=“Taher”`

`City=‘Cairo’`

3- Booleans: A data type that contains only two values `True` or `False`

Often used in comparisons and decision making in codes

`Is_taher_student=False`

`Is_taher_a_teacher=True`

Python program interface

- 1- Through the interactive Python Shell interface, you can write **simple** codes and execute them directly to see the results.
- 2- The Text Editor allows you to write longer, more complex codes and save them for later execution

Print function() In Python it is one of the most used functions, as it is used to display text or values on the output screen and can be used to display text, variables, or even the results of mathematical operations

Questions and exercises



Put ✓ or X:-

1. Variables in programming languages are a reserved place in memory to store and save a specific value. ()
2. The variable name must not begin with a letter or an underscore sign `_`. ()
3. TAHER, Taher, tahir, TaheR are 4 names for variables in the Python language. ()
4. The change name contains letters (A-Z) or numbers or an underscore sign ()
5. When naming variables, reserved words in the Python language may be used ()
6. `Y = 10` The statement type of the variable Y is numeric for an integer. ()
7. `City = "Cairo"` The statement type of the variable City is text. ()
8. `Is_taher_student = False` The statement type of the variable Is_taher_student is logical. ()
9. To know the type of the variable, we do not need to use the type function. ()
10. The texts of variables are placed between single quotation marks or double quotation marks. ()

Choose the correct answer

1. The function ... is used to display texts or values on the output screen
 - A. `Cos( )`
 - B. `Type( )`.
 - C. `Print( )`.
 - D. `Sn( )`.
2. value of the variable is placed between the signs
 - A. `'''`
 - B. `<>`.
 - C. `>=`.
 - D. `=<`.
3. To display texts, variables, or even the results of mathematical operations, we use the function
 - A. `Cos( )`
 - B. `Type( )`.
 - C. `Print( )`.
 - D. `Sin( )`.
4. To know the type of the variable statement, we use the function
 - A. `Cos( )`
 - B. `Type( )`.
 - B. `Print( )`.
 - D. `Sin( )`



Answer Key of the Textbook

Lesson5

-:Put or X			
1	✓	9	✓
2	X	10	X
3	X	11	✓
4	✓	12	X
5	✓	13	X
6	✓	14	X
7	X	15	✓
8	✓		

Lesson6

-: Put or X-1				Download Python from the official website and arrange the following steps in the correct order
1	X	6	X	1- Visit the official Python website www.python.org
2	X	7	✓	2- Select "Downloads"
3	✓	8	X	Then choose the system you are working on (Windows, Mac, or Linux)
4	✓	9	✓	4- You must choose 64 bit or 32 bit, according to your device specifications.
5	✓	10	✓	5-After downloading, install the program on your device and follow the instructions

Lesson7

A-:Put or X		B-Choose the correct answer	
1	✓	1	Print()
2	X	2	" "
3	✓	3	Print()
4	✓	4	type()
5	X		
6	✓		
7	✓		
8	✓		
9	X		
10	X		

حمل الآن

مجاناً وحصرياً

المراجعة رقم (5)

اختبار شهر ابريل



Exercises



Put (✓) or (X)

1. In the Scratch program, a student needs to write a lot of complex code () .
2. Scratch is considered a difficult educational tool to use () .
3. In Scratch, the Stage area displays the programming sections () .
4. Scratch is a paid program () .
5. Scratch uses a visual interface based on a set of blocks () .
6. Scratch helps students learn the basic of programming () .
7. Scratch provides a very wide range of ideas that can be programmed () .
8. In Scratch, students have difficulty sharing projects with others () .
9. In Scratch, the results of the work or project appear in the Blocks Area () .
10. To execute the project, click the  icon ()
11. Interactive AI games can be created using Scratch () .
12. The Scratch interface cannot be changed to Arabic () .
13. The wait command can be used to control the speed of Sprite 's movement () .
14. Sprites used in the project appear in the Sprites area () .
15. Sprite 's location on the platform is determined by the value of the horizontal axis X only .()
16. Before executing any project the coordinates of the object on the stage are X=10 and Y=10 . ()
17. To modify the name of the Sprite , click on its current name and rename it() .
18. The direction of the Sprite 's movement can be changed by clicking on the word " Direction" .()
19. The Sprite can be shown or hidden on the platform by clicking on Choose Sprite .()
20. We use click , drag-and-drop to interact with any command inside the code section.
21. A script is a set of commands arranged in a specific order () .
22. The size of the sprite is changed by its value in the Sprites area () .

- 23** .The Sprite can be removed from the platform () .
- 24** .Only one Sprite can be added to the platform () .
- 25** .To add a new Sprite, click Choose Sprite () .
- 26** .The Stop command is used to watch the project execution () .
- 27** .A new background is added to the project through the script area() .
- 28** .The Start command is used to stop project () .
- 29** .We use the (X,Y) coordinates to determine the position of the Sprite on the stage .
- 30** .In Scratch, an object's name can be modified more than once () .
- 31** To make the movement continuous you can install the command several times.()
- 32** .Python is considered one of the most difficult programming languages () .
- 33** .The " pen down" block makes the pen start drawing any geometric shapes () .
- 34** .Python is considered an interpreted language because it translates code line by line () .
- 35** .It is not possible to create applications and websites in Python () .
- 36** .Python is a free and open-source language, which does not allow anyone to develop it() .
- 37** .Python is used in web application development, data science, artificial intelligence, machine learning, and game programming() .
- 38** .Python can be integrated with other languages such as C++, C, and Java because it is an integration language. ()
- 39** .The NumPy library is used in data science, statistics, and artificial intelligence() .
- 40** .Pandas is a library used for data analysis and processing () .
- 41** .Python is downloaded based on your device specifications, choosing between 64-bit and 32-bit() .
- 42** .Python is one of the easiest programming languages for beginners and can be downloaded from the official website www.python.org () .
- 43** .A program written in Python executes without interruption, even in the event of a programming error() .
- 44** .Python runs on various operating systems, such as Windows and Linux() .

- 45** .The Python programming language is easy because of using words similar to English. ()
- 46** . Variables in programming languages are reserved places in memory to store and save a specific value. ()
- 47** .A variable name cannot start with a letter or an (_) character. ()
- 48** .AMIRA, AMiRa, amira, Amira are 4 names for variables in Python () .
- 49** .The variable name can contain letters (A-Z), numbers, or the underscore .(_)
- 50** .When naming variables, you can use Python reserved words () .
- 51** - Y=25.3 , the type of the variable Y, is integer() .
- 52** .City = "Cairo" the type of the variable City is string.()
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d. say hi

Exercises



Put (✓) or (X)

1. In the Scratch program, a student needs to write a lot of complex code (X) .
- 2 .Scratch is considered a difficult educational tool to use (X) .
- 3 .In Scratch, the Stage area displays the programming sections (X) .
- 4 .Scratch is a paid program (X) .
- 5 .Scratch uses a visual interface based on a set of blocks (✓) .
- 6 .Scratch helps students learn the basic of programming (✓) .
- 7 .Scratch provides a very wide range of ideas that can be programmed (✓) .
- 8 .In Scratch, students have difficulty sharing projects with others (X) .
- 9 .In Scratch, the results of the work or project appear in the Blocks Area (X) .
10. To execute the project, click the  icon (✓)
11. Interactive AI games can be created using Scratch (✓) .
- 12 .The Scratch interface cannot be changed to Arabic (X) .
- 13 .The wait command can be used to control the speed of Sprite 's movement (✓) .
- 14 .Sprites used in the project appear in the Sprites area (✓) .
- 15 .Sprite 's location on the platform is determined by the value of the horizontal axis X only .(X)
- 16 .Before executing any project the coordinates of the object on the stage are X=10 and Y=10 . (X)
- 17 .To modify the name of the Sprite , click on its current name and rename it(✓) .
- 18 .The direction of the Sprite 's movement can be changed by clicking on the word " Direction" .(✓)
- 19 . The Sprite can be shown or hidden on the platform by clicking on Choose Sprite X .
- 20 .We use click , drag-and-drop to interact with any command inside the code section. (✓)

- 21 .A script is a set of commands arranged in a specific order (✓) .
- 22 . The size of the sprite is changed by its value in the Sprites area (✓) .
- 23 .The Sprite can be removed from the platform (✓) .
- 24 .Only one Sprite can be added to the platform (X) .
- 25 .To add a new Sprite, click Choose Sprite (✓) .
- 26 .The Stop command is used to watch the project execution (X) .
- 27 .A new background is added to the project through the script area(X) .
- 28 .The Start command is used to stop project (X) .
- 29 .We use the (X,Y) coordinates to determine the position of the Sprite on the stage ✓
- 30 .In Scratch, an object's name can be modified more than once (✓) .
- 31 .To make the movement continuous you can install the command several times. ✓
- 32 .Python is considered one of the most difficult programming languages (X) .
- 33 .The " pen down" block makes the pen start drawing any geometric shapes (✓) .
- 34 .Python is considered an interpreted language because it translates code line by line (✓) .
- 35 .It is not possible to create applications and websites in Python (X) .
- 36 .Python is a free and open-source language, which does not allow anyone to develop it(X) .
- 37 .Python is used in web application development, data science, artificial intelligence, machine learning, and game programming(✓) .
- 38 .Python can be integrated with other languages such as C++, C, and Java because it is an integration language. (✓)
- 39 .The NumPy library is used in data science, statistics, and artificial intelligence(✓) .
- 40 .Pandas is a library used for data analysis and processing (✓) .
- 41 .Python is downloaded based on your device specifications, choosing between 64-bit and 32-bit(✓) .

- 42 .Python is one of the easiest programming languages for beginners and can be downloaded from the official website www.python.org (✓) .
- 43 .A program written in Python executes without interruption, even in the event of a programming error(X) .
- 44 .Python runs on various operating systems, such as Windows and Linux(✓) .
- 45 .The Python programming language is easy because of using words similar to English. (✓)
- 46 .Variables in programming languages are reserved places in memory to store and save a specific value. (✓)
- 47 .A variable name cannot start with a letter or an (_) character. (X)
- 48 .AMIRA, AMiRa, amira, Amira are 4 names for variables in Python (✓) .
- 49 .The variable name can contain letters (A-Z), numbers, or the underscore (_) ✓
- 50 .When naming variables, you can use Python reserved words (X) .
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مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

